



## Clinical Guidelines on Infant and Young Child Feeding (IYCF)





## Clinical Guidelines on Infant and Young Child Feeding (IYCF)



### PREFACE

*Clinical Guidelines on Infant and Young Child Feeding (IYCF)* has been developed for medical doctors. It is meant to provide them with an easy-to-use and up-to-date reference to support them in counseling mothers about feeding practices for children under two years of age. The guidelines are based on current recommendations by the World Health Organization (WHO) and the Government of Bangladesh concerning infant and young child feeding. They were prepared as part of the “Doctors Media Campaign” along with other materials.

In Bangladesh, about 64 percent of infants below six months are exclusively breastfed (BDHS, 2011). Only about 21 percent of children 6 to 23 months of age receive appropriate and timely complementary foods. About 500,000 children below five years in Bangladesh suffer from severe acute malnutrition. The consequences of inappropriate feeding practices in early childhood are far-reaching and are major obstacles to our efforts towards sustainable socioeconomic development and poverty reduction.

According to research conducted by the International Food Policy Research Institute for the Alive & Thrive Project in 2012 and 2013, over 65 percent of all mothers with a child under two years of age seek advice from medical doctors regarding issues related to young child feeding. However, a study on “Doctors Media Habits” conducted in 2012 among doctors practicing at the Upazilla level throughout the country showed that many of them do not have up-to-date information for counseling mothers about their difficulties in this area. The study, which was carried out by Quantum Consumer Solutions Ltd, explored doctors’ knowledge, perceptions, and counseling practices regarding infant and young child feeding. It assessed their awareness of the International Code of Marketing of Breast-milk Substitutes and legislation regarding maternity leave, as well as their counseling practices for mothers on breastfeeding and complementary feeding.

The results of these two studies made it clear that guidelines with correct and current information on this topic are urgently needed and doctors need to be encouraged to pro-actively ask about infant feeding practices.

As part of their study, Quantum Consumer Solutions Ltd asked medical doctors what information they would like to receive regarding breastfeeding and complementary feeding, in what format, and through which channels. Doctors were also asked to share their perceptions of how their profession can help address the high malnutrition levels in Bangladesh. The current guidelines were developed and designed based on those findings. Concept testing and field testing of all materials for the “Doctors Media Campaign” were also carried out by Quantum Consumer Solutions Ltd.

Medical doctors in Bangladesh, equipped with the current guidelines, will be able to contribute to improving the nutritional status of infant and young children in the country. The Millennium Development Goals (MDGs) will not be achieved without action to reduce the rate of malnutrition among infants and young children. Appropriate infant and young child feeding is an affordable and sustainable health and development intervention.

## List of Acronyms

|       |  |
|-------|--|
| BBF   | Bangladesh Breastfeeding Foundation                |
| BF    | Breastfeeding                                      |
| BFHI  | Baby-Friendly Hospital Initiative                  |
| BMS   | Breastmilk Substitute                              |
| BOT   | Board of Trusty                                    |
| CF    | Complementary Feeding                              |
| EBM   | Expressed Breastmilk                               |
| FAO   | Food and Agriculture Organization                  |
| ICMH  | Institute of Child and Mother Health               |
| IFPRI | International Food Policy Research Institute       |
| IUD   | Intrauterine Device                                |
| IYCF  | Infant and Young Child Feeding                     |
| IUGR  | Intrauterine Growth Retardation                    |
| LAM   | Lactational Amenorrhea Method                      |
| LBW   | Low birthweight                                    |
| NNS   | National Nutrition Services                        |
| OGSB  | Obstetrical & Gynaecological Society of Bangladesh |
| SGA   | Small for Gestational Age                          |
| WHO   | World Health Organization                          |

# Table of Content

## Section 1: Introduction and Overview of Infant and Young Child Feeding

|     |   |   |
|-----|---|---|
| 1.1 | Introduction to Infant and Young Child Feeding (IYCF) | 2 |
| 1.2 | Overview of feeding during first two years            | 2 |
| 1.3 | Clinical guidelines for IYCF                          | 3 |

## Section 2: Breastfeeding

|       |  |    |
|-------|--|----|
| 2.1   | Basics of Breastfeeding (BF)                         | 5  |
| 2.1.1 | Hormonal control of breastmilk production and supply | 5  |
| 2.1.2 | No pre-lacteal feeds                                 | 6  |
| 2.1.3 | Initiation of breastfeeding                          | 6  |
| 2.1.4 | Colostrum  | 6  |
| 2.1.5 | Mature milk  | 7  |
| 2.1.6 | Foremilk and hindmilk                                | 7  |
| 2.1.7 | Composition of breastmilk                            | 7  |
| 2.1.8 | Feeding on demand                                    | 8  |
| 2.1.9 | Assessment of adequate milk supply                   | 8  |
| 2.2   | Benefits of breastfeeding                            | 8  |
| 2.3   | Antenatal preparation for breastfeeding              | 9  |
| 2.4   | Disadvantages of bottle/artificial feeding           | 9  |
| 2.5   | Breastmilk Substitutes (BMS) Code                    | 9  |
| 2.6   | Techniques of breastfeeding                          | 10 |
| 2.6.1 | Position   | 10 |
| 2.6.2 | Attachment   | 11 |
| 2.6.3 | Expression of breastmilk (EBM)                       | 11 |
| 2.7   | Contraception during breastfeeding                   | 13 |
| 2.7.1 | Lactational amenorrhea method (LAM)                  | 13 |
| 2.7.2 | Other methods  | 13 |
| 2.8   | Breastfeeding during sickness                        | 14 |
| 2.9   | Drugs and breastfeeding                              | 14 |

|        |  |    |
|--------|--|----|
| 2.10   | Breastfeeding difficulties and management  | 14 |
| 2.10.1 | Sore or fissured nipple  | 14 |
| 2.10.2 | Engorgement of breast  | 15 |
| 2.10.3 | Mastitis   | 16 |
| 2.10.4 | Blocked duct   | 17 |
| 2.10.5 | Breast abscess   | 17 |
| 2.10.6 | Inverted, flat, large, and long nipples  | 18 |
| 2.10.7 | Candida infection (thrush) in mother and baby  | 19 |
| 2.11   | Breastfeeding in special situations (baby's issues)                                      | 19 |
| 2.11.1 | Breastfeeding and the low birthweight baby   | 19 |
| 2.11.2 | Breastfeeding and twins  | 20 |
| 2.11.3 | Baby with cleft lip and/or palate  | 21 |
| 2.11.4 | Baby with muscular weakness  | 21 |
| 2.11.5 | Breastfeeding a sick baby  | 21 |
| 2.12   | Breastfeeding in special situations (mother's issues)                                    | 22 |
| 2.12.1 | Breastfeeding after caesarean section  | 22 |
| 2.12.2 | Breastfeeding and HIV  | 22 |
| 2.12.3 | Breastfeeding and hepatitis  | 24 |
| 2.12.4 | Breastfeeding and tuberculosis (pulmonary)   | 24 |
| 2.12.5 | Breastfeeding and chicken pox  | 24 |
| 2.13   | Breastfeeding and working mothers  | 24 |
| 2.14   | Maternity leave  | 24 |
| 2.15   | Questions about insufficient breastmilk  | 25 |
| 2.15.1 | Mother's perceived insufficiency of low breastmilk production                            | 25 |
| 2.15.2 | Low breastmilk intake  | 25 |
| 2.15.3 | Management of perceived insufficiency of low breastmilk production and breastmilk supply | 27 |
| 2.16   | Common breastfeeding problems related to baby  | 27 |
| 2.16.1 | Crying   | 27 |
| 2.16.2 | Infantile colic  | 28 |
| 2.16.3 | Vomiting   | 28 |
| 2.16.4 | Refusal to breastfeed  | 28 |
| 2.17   | Risk factors for difficulty with breastfeeding (general)                                 | 29 |

|        |   |    |
|--------|---|----|
| 2.18   | Age groups at risk for poor breastfeeding practices             | 29 |
| 2.19   | Laws in Bangladesh protecting the breastfeeding mother and baby | 30 |
| 2.19.1 | Baby-Friendly Hospital Initiative (BFHI)                        | 30 |
| 2.19.2 | Protection of new mothers                                       | 31 |

### Section 3: Complementary Feeding

|      |  |    |
|------|--|----|
| 3.1  | Definition of Complementary Feeding (CF)                   | 33 |
| 3.2  | Importance of complementary feeding                        | 33 |
| 3.3  | Ten guiding principles for complementary feeding           | 34 |
| 3.4  | Physiological basis of complementary feeding               | 34 |
| 3.5  | Characteristics of appropriate complementary foods         | 36 |
| 3.6  | Importance of hygiene and complementary foods              | 36 |
| 3.7  | Complementary food diversity                               | 36 |
| 3.8  | Recommended schedule of complementary feeding              | 37 |
| 3.9  | Responsive feeding   | 38 |
| 3.10 | Feeding during and after illness                           | 38 |
| 3.11 | Feeding a child with poor appetite                         | 38 |
| 3.12 | Complementary feeding difficulties                         | 39 |
| 3.13 | Age groups at risk of poor complementary feeding practices | 40 |

### Section 4: Additional Information

|       |   |    |
|-------|---|----|
| 4.1   | Malnutrition                            | 43 |
| 4.2   | Maternal nutrition and breastfeeding    | 44 |
| 4.3   | Counseling on IYCF                      | 45 |
| 4.4   | Monitoring of IYCF                      | 46 |
| 4.5   | Growth of children                      | 47 |
| 4.5.1 | Growth of a well-nourished child        | 47 |
| 4.5.2 | Children's growth pattern in Bangladesh | 48 |
| 4.5.3 | Milestones of children's growth         | 49 |

### List of Tables

|          |                          |   |
|----------|--------------------------|---|
| Table 1: | IYCF clinical guidelines | 3 |
|----------|--------------------------|---|

|          |  |    |
|----------|--|----|
| Table 2: | Lactational amenorrhea method (LAM)  | 13 |
| Table 3: | Age appropriate recommended schedule of complementary feeding  | 37 |
| Table 4: | Median weights and lengths of children up to two years by age (WHO growth standards for well-nourished children) | 47 |

### List of Figures

|            |   |    |
|------------|---|----|
| Figure 1:  | Energy needed in calories per day for children 0–23 months of age           | 2  |
| Figure 2:  | Oxytocin and prolactin secretion mechanism                                  | 5  |
| Figure 3:  | Comparison of nutrients in human milk with those of milk from other animals | 7  |
| Figure 4:  | Correct positions during breastfeeding (sitting and lying positions)        | 10 |
| Figure 5:  | External signs of good and poor attachment                                  | 11 |
| Figure 6:  | Expression of breastmilk  | 12 |
| Figure 7:  | Sore nipple   | 15 |
| Figure 8:  | Mastitis  | 16 |
| Figure 9:  | Low birthweight baby feeding  | 20 |
| Figure 10: | Mother breastfeeding twins  | 20 |
| Figure 11: | Dancer-hand position  | 21 |
| Figure 12: | Gap to be filled by complementary foods for breastfed child 12–23 months    | 33 |
| Figure 13: | Varieties of Food   | 37 |
| Figure 14: | Growth pattern among children in the first two years in Bangladesh          | 48 |
| Figure 15: | Windows of achievement for six gross motor milestones                       | 49 |

### Annex I: 50

The Breastmilk Substitutes Act

### Annex II: 54

List of references

## Message



Health and nutrition are the most important contributory factors for human resource development in a country. In recent times we have achieved remarkable progress in health and population with some indicators particularly in reducing child mortality and maternal mortality. We know that about one fifth of all under five child deaths is preventable through optimal IYCF practices alone. However, the challenge remains in improving the nutritional status of children and women in Bangladesh. In spite of many challenges the Ministry of Health and Family Welfare is committed to achieving the Millennium Development Goals (MDGs). Health and nutrition-related MDGs are linked to all other MDGs.

In this milieu, I am pleased that the Institute of Public Health Nutrition (IPHN) has developed this “Clinical Guidelines on Infant and Young Child Feeding (IYCF)” guidebook for doctors under “Doctors Media Campaign”. I strongly believe that with the help of this guidebook doctors could play an important role in sustainable nutritional development for infants and young children in Bangladesh by providing messages on correct IYCF practices to mothers and caregivers.

I appreciate IPHN, Paediatricians, and Obstetricians & Gynaecologists, Public Health Experts, Nutritionists, Development Partners and other Organizations who played crucial role in developing this guidebook.

Joy Bangla Joy Bangabandhu  
Long Live Bangladesh

**Mohammed Nasim MP**  
Minister  
Ministry of Health and Family Welfare  
Government of People's Republic of Bangladesh

## Message



Nutrition is a basic human need and a prerequisite to a healthy life. An appropriate diet is essential from the very early stages of life for proper growth, development and to remain active. In Bangladesh almost one half of children under five years are victims of undernutrition. Inappropriate Infant and Young Child Feeding (IYCF) practices are the main cause of malnutrition. Through appropriate practices of Infant and Young Child Feeding in urban and rural communities, childhood mortality and morbidity can be reduced in Bangladesh. Malnourished children who survive are more frequently sick and suffer the lifelong consequences of impaired physical and intellectual development.

The “Clinical Guidelines on Infant and Young Child Feeding (IYCF)” guidebook has developed under “Doctors Media Campaign” for doctors. I believe, it will help doctors to provide updated messages to mothers of under 2 children about child feeding age appropriately when they will visit doctors with their children and thereby possible to reduce the burden of nutritional morbidity and mortality of children in Bangladesh.

There is evidence that the feeding practices of infants and young children, particularly breastfeeding and complementary feeding, are not optimal in Bangladesh and are contributing to the high levels of malnutrition. I appreciate the initiative of the Institute of Public Health Nutrition in developing such an important guidebook for doctors on IYCF. I also appreciate the contributions of the technical experts, development partners, particularly Alive & Thrive Bangladesh and unicef for developing the guidebook.

I anticipate that using of the guidebook will make significant changes in the field of feeding practices of infants and young children, particularly breastfeeding and optimal complementary feeding.

Joy Bangla Joy Bangabandhu  
Long Live Bangladesh

**Zahid Maleque, MP**  
State Minister  
Ministry of Health and Family Welfare  
Government of People's Republic of Bangladesh



## Message



Despite major accomplishments in reducing child mortality and maternal mortality, malnutrition remains a challenge in Bangladesh. In order to address malnutrition, the Ministry of Health and Family Welfare has planned to mainstream nutrition services through preventive and curative services of the Directorate General of Health Services (DGHS), Directorate General of Family Planning (DGFP) and Community Clinics. The correction of inappropriate child feeding practices can prevent malnutrition and its consequences.

It is difficult to change human behavior and current practices. Behavior change will focus on the actions that need to be taken by a mother, her family and many others in support of breastfeeding and complementary feeding practices that will best serve the nutritional needs of neonates, infants and young children. This “Clinical Guidelines on Infant and Young Child Feeding (IYCF)” guidebook developed under “Doctors Media Campaign” for doctors has given priority for effective behavior change and practices of Infant and Young Child Feeding (IYCF) at the household level.

I express thanks to the Institute of Public Health Nutrition for taking the initiative to develop the guidebook for Infant and Young Child feeding. I expect, it would be doctors’ opportunity to disseminate the updated information among mothers of under 2 children when they will visit doctors at different service delivery points. Thus, through correct IYCF practices nutritional status of under two children will be improved in Bangladesh.

We are grateful to all the contributors like, Paediatricians, Obstetricians & Gynaecologist, public health experts, nutritionists, officers from DGHS, development partners who contributed in developing the guidebook for Infant and Young Child Feeding (IYCF). It is my firm belief that development partners will continue their support in improving the present levels of child malnutrition in Bangladesh.

**M. M. Neazuddin**  
Secretary  
Ministry of Health and Family Welfare  
Government of People’s Republic of Bangladesh

## Message



In order to increase exclusive breastfeeding up to six months and to reduce under nutrition (stunting, wasting, under-weight and anemia), we need to improve Infant and Young Child Feeding (IYCF) in children less than 2 years of age.

Infant and young child feeding requires motivation, counseling and demonstration to change current practices and myths regarding infant and young child feeding. Behavior change will focus on the actions that need to be taken by a mother, her family and many others in support of breastfeeding and complementary feeding practices that will best serve the nutritional needs of infants and young children. For that reason the “Clinical Guidelines on Infant and Young Child Feeding (IYCF)” guidebook has developed under “Doctors Media Campaign” for doctors. Doctors have the scope to interact with mothers of under 2 children and disseminate correct IYCF information among them. We know behavior change counseling and demonstration can bring effective changes in Infant and Young Child Feeding (IYCF) practices.

I expect that the guidebook for Infant and Young Child Feeding will be well used by the doctors in counseling the mothers for correct IYCF practices.

My sincere thanks to the Institute of Public Health Nutrition for undertaking the initiative in developing the guidebook with the help of relevant technical experts and concerned departments of Directorate General of Health Services. I appreciate the efforts of IPHN, development partners including UNICEF, Alive and Thrive Bangladesh, and other stakeholders in developing the guidebook. I hope that by learning through this guidebook, all doctors will play a vital role in improving infant and young child feeding in Bangladesh

**Prof. Dr. Deen Mohd. Noorul Huq**  
Director General, DGHS  
Ministry of Health and Family Welfare  
Government of People’s Republic of Bangladesh

## Message



In the last few decades we have achieved remarkable success in improvement of maternal and child health and in reduction of child mortality. The Honorable Prime Minister has received the award from United Nations for reduction of child mortality in Bangladesh. Due to malnutrition many untimely deaths of children occur in Bangladesh. Many of the children suffer from physical and mental disability as well. To prevent these, doctors need updated information to counsel and motivate mothers to improve IYCF practices i.e. increase exclusive breastfeeding up to 6 months and to improve complementary feeding practices among children below 2 years. For this development of “Clinical Guidelines on Infant and Young Child Feeding (IYCF)” under “Doctors Media Campaign” is an timely approach, by which doctors will be updated with recent IYCF knowledge that will help doctors in transferring correct messages among mothers of under 2 children at their service delivery points.

I am delighted that IPHN has developed an accurate and effective guidebook on IYCF for the use of all levels of doctors of Health and Family Planning Directorates.

I congratulate those persons who were involved with the development process of this guidebook. I hope that by acquiring knowledge from this guidebook, doctors of MOH&FW will play an important role in the improvement of nutritional status of children of Bangladesh.

**Md. Nur Hossain Talukder**  
Director General, DGFP  
Ministry of Health and Family Welfare  
Government of People's Republic of Bangladesh

## Message



Poor nutrition severely hinders individual, social and national development. In Bangladesh, more than 75% children are suffering from different types of malnutrition. The role of breastfeeding and appropriate complementary feeding in the good physical and mental health and development of children is quite clear. During early stages of childhood, vitamin and mineral deficiencies caused by malnutrition impair the immune system and inhibit cognitive and physical development of children. Bangladesh has made some progress in overcoming these deficiencies but much remains to be done. The Government of Bangladesh has taken several important steps to address IYCF problems.

The “Clinical Guidelines on Infant and Young Child Feeding (IYCF)” developed under “Doctors Media Campaign” in the aspiration of National Strategy for Infant and Young Child Feeding and National Nutrition Services (NNS) as well as the National Communication Framework and Plan for Infant and Young Child Feeding (IYCF) of Bangladesh.

Aim of the development of this guidebook is to update doctors' knowledge on IYCF so that they can talk to mothers of under two children for optimal IYCF practices that will in turn enhance the health and nutritional development of infants and young children in Bangladesh.

I hope, our doctors from their social commitment and professional responsibility will provide the correct messages on IYCF practices to mothers of under 2 children proactively to make aware parents about proper nutrition practices for their children.

**National Professor (Dr.) M. R. Khan**



## Acknowledgement



Bangladesh has achieved remarkable success in health and population development especially in child health development and in reduction of child mortality. Though achievement in child development and reduction in child mortality is notable, prevailing malnutrition is still a main problem. We have to go far for the nutritional improvement of mothers and children. The Ministry of Health and Family Welfare is committed to achieving Millennium Development Goals and for this, special importance has been given to maternal and child nutrition. The Ministry of Health and Family Welfare has already developed and started implementation of the national IYCF strategy and National IYCF Communication recommendations. The Government has developed a work plan integrating nutrition in mainstreaming services of health and family planning and started implementation through the health and family planning directorates.

Malnutrition is a barrier to individual, social and national development. This malnutrition and related complications can be prevented by providing appropriate complementary feeding. IYCF also prevents delayed child development, impaired educational ability, long time poor health and untimely death. Breast milk and complementary feeding play an important role in a child's mental and physical development. Bangladesh government has planned and already undertaken some steps to address the IYCF problem.

Part of this initiative the “Clinical Guidelines on Infant and Young Child Feeding (IYCF)” has been developed under “Doctors Media Campaign” and it will be used by the doctors.

The aim of the development of this guidebook is to update doctors' knowledge with recent IYCF information. So that they can talk to mothers and caregivers of under 2 children on optimal IYCF practices at different service delivery points/contacts. This guidebook has developed in the light of HPNSDP, NNS and National IYCF Communication Plan and Framework.

On behalf of IPHN I would like to express my thanks and gratitude to the academic technical experts of different medical colleges and hospitals, public health experts, nutritionists and also Alive and Thrive Initiative Bangladesh, BBF, UNICEF and OGSB.

**Dr. Md. Shah Nawaz**

Director

Institute of Public Health Nutrition (IPHN)  
and Line Director National Nutrition Services

## List of Technical Experts/Contributors, who contributed in developing the “Clinical Guidelines on Infant and Young Child Feeding (IYCF):

*(Names are arranged in Alphabetically)*

Dr. Abdul Mannan, Nutrition Adviser, FAO and Vice Chairperson, BOT, BBF

Mr. Abu Ahmed Shamim, Technical Director., SHIKHA Project, FHI360

Dr. Md. Abdul Jalil, DD, IPHN & Program Manager, NNS

Afroza Begum, Director, Program, BBF

Dr. Alamgir Morshedi, Deputy Program Manager, NNS, IPHN

Dr. Ekhlashur Rahman, Professor, Head of Pediatrics Dept.  
Dhaka Medical College Hospital

Dr. Faruque Ahmed, Deputy Program Manager, NNS, IPHN

Dr. Fatema Parveen Chowdhury, Ex. Director IPHN & Line Director, NNS, IPHN

Dr. Ferdousi Begum, Professor, Obs. & Gynae, SSMCH

Dr. Iqbal Kabir, Vice Chairperson, BOT, BBF

Khurshid Jahan, Director, Admin, BBF

Dr. M.A.K. Azad, Professor, Pediatrics Dept. Dhaka Shishu Hospital

Dr. Malay Mridha, Consultant, Alive & Thrive

Dr. Mir Mobarak Hossain Diganto, Deputy Program Manager, NNS, IPHN

Dr. Mohsin Ali, Nutrition Specialist, unicef

Dr. Mohammad Hedayetul Islam, Ex. Director, IPHN & Line Director, NNS, IPHN

Dr. Md. Moudud Hossain, DD, DGHS, & Program Manager, NNS

Dr. Nasreen Khan, Deputy Program Manager, NNS, IPHN

Dr. Nazneen Kabir, Prof. & Head of OBGYN, ICMH

Dr. Rukhsana Haider, Chairperson, THAN Foundation

Dr. Shah Nawaz, Director IPHN & Line Director NNS, IPHN

Dr. Sameena Chowdhury, Professor, Obs.&Gynae. & Executive Member, OGSB

Dr. Shirin Akhter, Capacity Building Specialist, Alive & Thrive

Dr. S.K. Roy, Chairperson, BBF

Dr. S. M. Mustafizur Rahman, Country Director, Micro Nutrient Initiative

Dr. Soofia Khatun, Professor & Head of Pediatrics, ShSMCH

Dr. Subroto Kumar Roy, Assistant Professor, Pediatrics

Dhaka Medical College Hospital

Mr. Sumitro Roy, Chief of Party, Alive & Thrive, Bangladesh

Syeda Mohsina Akhter, Asst. Director, BBF

Dr. Syed Shafi Ahmed, Professor, Dhaka Shishu Hospital

Dr. Taherul Islam Khan, Program Manager, NNS

Dr. Tapan Kumar Biswas, AD, DGHS, Deputy Program Manager, NNS

Dr. Tina G Sanghvi, Senior Country Director, Alive & Thrive, Bangladesh

Dr. Wahida Khanam, Asso. Prof. Dept. of Pediatrics, ICMH

## Section 1

# INTRODUCTION AND OVERVIEW OF INFANT AND YOUNG CHILD FEEDING



Infant and Young Child Feeding (IYCF) refers to feeding practices of children from the time of birth to the completion of 23 months of age. These practices include breastfeeding and complementary feeding. The key national policies and international guidelines concerning IYCF are:

## Section 2

# BREASTFEEDING

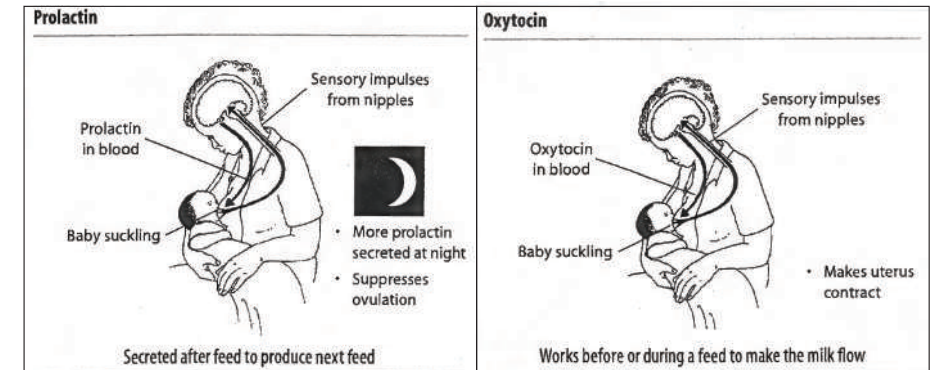


## 2.1 Basics of Breastfeeding (BF)

### 2.1.1 Hormonal control of breastmilk production and supply

- Two hormones directly affect breastfeeding: **prolactin and oxytocin**.
- When a baby suckles at the breast, sensory impulses pass from the mother's nipple to her brain.
- In response, the anterior lobe of the pituitary gland secretes prolactin and the posterior lobe secretes oxytocin.

Figure 2: Prolactin and oxytocin secretion mechanism



Source: WHO2009

### Prolactin

- Prolactin is necessary for the secretion of milk by the cells of the alveoli in the breast.
- The level of prolactin in the blood increases markedly during pregnancy and stimulates the growth and development of the mammary gland in preparation for the production of milk.
- Prolactin level is high in the first two hours after birth.
- When baby suckles, the level of prolactin in the blood increases and stimulates production of milk by the alveoli.
- If the mother stops breastfeeding, milk secretion decreases and may stop
- More prolactin is produced at night, so breastfeeding at night is especially helpful for keeping up the milk supply. Prolactin makes a mother relax and feel sleepy.

### Oxytocin

- Oxytocin makes the myoepithelial cells around the alveoli contract.
- Oxytocin stimulates the milk that is already in the breast to flow at the time of a feed and helps the baby get the milk easily.
- The oxytocin reflex is sometimes also called the "letdown reflex" or the "milk ejection reflex."
- Oxytocin starts working when a mother expects a feed as well as when the baby is suckling.
- The reflex becomes conditioned to the mother's sensations and feelings, such as

touching, smelling or seeing her baby, hearing her baby cry, or thinking lovingly about him or her.

- If a mother is in severe pain or emotionally upset, the oxytocin reflex may become inhibited and her milk may suddenly stop flowing well. If she receives support and feels comfortable, she will continue to breastfeed the baby and the milk will start to flow again.
- It is important to understand the oxytocin reflex because it explains why the mother and baby should be kept together and why they should have skin-to-skin contact.
- Oxytocin makes a mother's uterus contract after delivery and helps to reduce bleeding. The contractions cause uterine pain when the baby suckles during the first few days. The mother should know the contractions are good for her and the pain is not harmful to her health.

### 2.1.2 No pre-lacteal feeds

- **Babies should not be given honey, water mixed with sugar, mustard oil, or any other liquid or food after birth.**
- Germs from these foods can enter the baby's body and can cause illness and even death.
- These foods can interfere with the newborn's learning how to suckle, resulting in milk not coming into the mother's breast and produced inadequate amount.

### 2.1.3 Initiation of breastfeeding

- Recommended initiation of breastfeeding is within one hour of the baby's birth.
- Baby's suckling reflex is maximum at this stage.
- If the baby is put on mother's breast immediately after birth, baby can begin to suckle and this helps milk to come in quickly.

### 2.1.4 Colostrum

- Colostrum production begins during pregnancy and continues through the early days of breastfeeding.
- Colostrum is high in carbohydrates, protein, antibodies and vitamin A. It is extremely easy to digest the perfect first food for a baby.
- It is low in volume (only a few ml), yellowish in color but high in nutrients in concentrated form, as well as in antibodies for the newborn.
- Colostrum has a laxative effect on the baby, helping baby to pass early stools, which aids in the excretion of excess bilirubin and helps to prevent jaundice.
- The concentration of immune factors is much higher in colostrum than in mature milk.
- Immunoglobulin A in colostrum protects the baby from infection of the mucous membranes of the throat, lungs, and intestines.
- A newborn's intestines are very permeable. Colostrum seals the pores by coating the gastrointestinal tract with a barrier that prevents foreign substances from penetrating possibly causing allergies.
- Colostrum also contains high concentrations of leukocytes protective white cells that can destroy disease-causing bacteria and viruses.
- For premature and low birthweight newborns, colostrum is life saving and should be expressed and fed the baby if he or she can't suckle.

### 2.1.5 Mature milk

- When the baby is breastfed early and frequently, mature milk production starts around the third or fourth day after birth. Milk production is supported by the baby's suckling.
- Breastmilk then increases in volume and generally changes to a thinner consistency and whiter color.
- Mother's mature milk contains enough antibodies and other nutrients for the baby.
- In the first few days and weeks it is extremely important to breastfeed newborns on demand or when the baby wants to feed at least 8-10 times in every 24 hours.
- This allows the baby to get all the benefits of the colostrum and also stimulates plentiful production of mature milk.
- Frequent breastfeeding also helps to prevent breast engorgement.

### 2.1.6 Foremilk and hindmilk

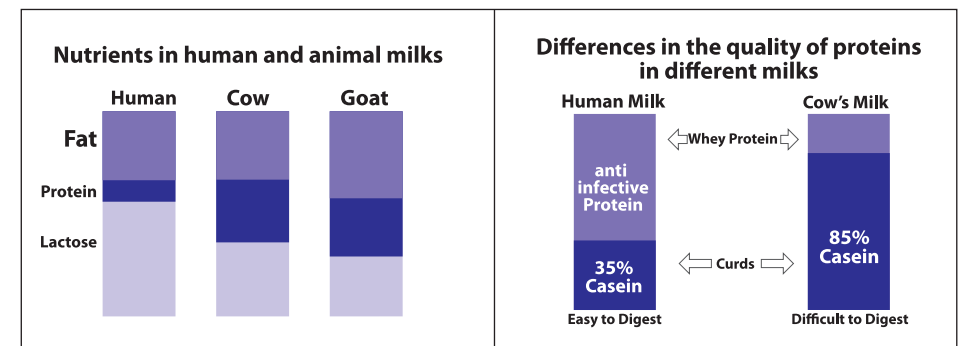
*Foremilk* is the milk that is produced early in a feed. It has higher water content and lower fat than hindmilk. Foremilk looks thinner than hindmilk. It is produced in larger amounts and it provides plenty of protein, lactose, and other nutrients. (Because a baby gets large amounts of foremilk, he or she gets all the water that is needed. Babies do not need other drinks or water before they are six months old, even in a hot climate.)

*Hindmilk* is the milk that is produced later in a feed. Hindmilk looks whiter than foremilk, because it contains more fat. This fat provides much of the energy needed by a breastfed baby. This is an important reason not to take a baby off a breast too quickly. The baby should be allowed to continue suckling until he or she is satisfied and leaves the breast by himself/herself.

### 2.1.7 Composition of breastmilk

Figure 3 shows the proportion of nutrients in breastmilk in comparison with fresh cow's and goat's milk.

**Figure 3: Comparison of nutrients in human milk with those of milk from other animals**



Source: WHO/UNICEF 2006



- Human milk contains essential fatty acids that are needed for a baby's growing brain and eyes and for healthy blood vessels. These fatty acids are not present in animal milks. Animal milks contain more protein than human milk. However, it is difficult for a baby's immature kidneys to excrete the extra solute load and waste from the protein in animal milks.
- Figure 3 shows that much of the protein in cow's milk is casein. Casein forms thick, indigestible curds in a baby's stomach.
- Artificially fed babies may develop intolerance to protein from animal milk. They may develop diarrhea, abdominal pain, rashes, and other symptoms when they have feeds that contain the different kinds of protein.
- The above facts led international and national scientists to conclude that there is no substitute for breastmilk.

### 2.1.8 Feeding on demand

- Feed in response to early feeding cues.
- Put the baby on the breast at the onset of early signs of hunger (*early sign – opening of mouth; late sign – cycling/limb movement; very late sign – crying*).
- Always breastfeed whenever the baby wants.
- Wake the baby to breastfeed if she/he sleeps more than three hours in a day.

### 2.1.9 Assessment of adequate milk supply

The following signs will assure a mother that her baby is getting adequate breastmilk.

- Baby is **urinating six or more times in a day.**
- Baby is **playing** (limb movement in a happy mood).
- Baby is **sleeping well.**
- Baby is **gaining weight.**

If the signs are reversed, this is a clue that the baby is not getting enough milk.

## 2.2 Benefits of breastfeeding

### Benefits for baby:

- Up to six months of age, breastmilk provides all the necessary energy and nutrients of the highest quality for physical and mental development of children.
- Breastmilk contains antibodies that protect infants from different types of infection.
- Breastmilk is easily digested and reduces the risk of allergies.
- Except breastmilk nothing is safe for a baby of less than six months of age.
- Breastmilk has plenty of water, even for hot weather, and low renal solute load in comparison to non-human milks and formulas.
- Breastfed infants experience fewer adult chronic diseases such as diabetes, obesity, cardiovascular disease, and hypertension.
- Breastfeeding provide improved brain development and learning abilities.
- Breastfeeding support emotional attachment and bonding between the mother and infant.

### Benefits for mother:

- Breastfeeding immediately after delivery help reduce a mother's blood loss and stimulates rapid contraction of her uterus.
- If a mother breastfeeds her baby exclusively, it acts as a natural family planning method and there is only 2 percent risk of pregnancy. (See also the section on "Contraception during breastfeeding" and the lactational amenorrhea method.)
- Extra money is not needed to buy artificial milk or bottles and no extra workload is needed for preparing formula milk.
- Mothers who breastfeed experience less breast, ovarian & uterine cancer and osteoporosis.

## 2.3 Antenatal preparation for breastfeeding

### All pregnant women should be informed about:

- Benefits of breastfeeding and hazards of formula feeding.
- Hazards and restriction of pre-lacteal feeds.
- Initiation of breastfeeding within one hour of delivery, colostrum feeding and its importance.
- Breastfeeding techniques position, attachment, and breastmilk expression.
- Exclusive breastfeeding and the importance of maternity leave.
- Maintaining skin-to-skin contact between mother and baby just after birth.
- Maintaining rooming-in/bedding-in.

## 2.4 Disadvantages of bottle/formula feeding

Bottle-feeding/formula feeding is harmful for infants and children under two years of age because it:

- Interferes with mother-child bonding.
- Discourages proper suckling.
- Reduces the supply of breastmilk.
- Is associated with lower scores on Intelligence (IQ) tests.
- May undermine lactational amenorrhea. (and mother may become pregnant sooner)
- Is not sterile when the product has been packed in tins.
- Introduces pathogens, causes diarrhea and persistent diarrhea.
- Is costly.
- Leads to more frequent respiratory infections.
- Leads to malnutrition including vitamin A deficiency.
- Leads to more allergies and milk intolerance.
- Increases the risk of some chronic diseases.
- Increases the risk of obesity.

## 2.5 Breastmilk Substitutes (BMS) Code

### The International BMS Code states:

- No pacifiers or artificial nipples to be promoted.
- No infant formula or water to be promoted for infant feeding.
- No teas or juices to be promoted as infant foods.
- No distribution of samples or advertisement of infant feeding products to families or in health facilities.



- No baby product gifts for families from formula/milk companies.
- No gifts or inducements (e.g., scholarships, grants, facilities) to health staff including nurses and doctors.

### The Bangladesh BMS Act:

In Bangladesh, the Breast-Milk Substitute (Regulation of Marketing) Bill-2013 was passed to strengthen the regulations. The bill deals with marketing regulations for foods alternative to mother's breastmilk, commercially produced supplementary foods for children, and instruments to use them. Details of the relevant sections of the Act are attached in **Annex. I**

## 2.6 Techniques of breastfeeding

### 2.6.1 Position

Position refers to how the mother holds the baby during breastfeeding.

#### Position of mother:

- The mother can be sitting or lying down, or standing, if she wishes.
- However, she needs to be relaxed and comfortable, and without strain, particularly of her back.
- If she is sitting, her back needs to be supported and she should be able to hold the baby at her breast without leaning forward. Mother should not lean towards the baby, but bring the baby towards herself.

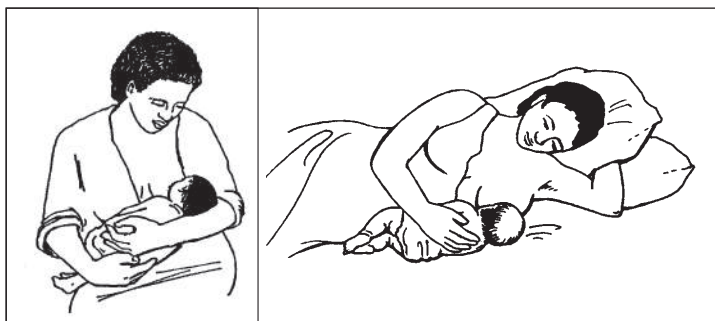
#### Position of baby:

- The baby can be breastfed when held across mother's chest and abdomen, under her arm, or alongside her body.

#### Four key points:

- The baby's body should be straight; head and shoulder must be in one line.
- He or she should be facing the breast.
- The baby's body should be close to the mother, enabling the baby to be close to the breast.
- His or her whole body should be supported, especially buttocks.

Figure 4: Correct positions during breastfeeding (sitting and lying positions)



Source: WHO 2009

### 2.6.2 Attachment

Attaching baby's mouth to breast is called attachment, or "latching on."

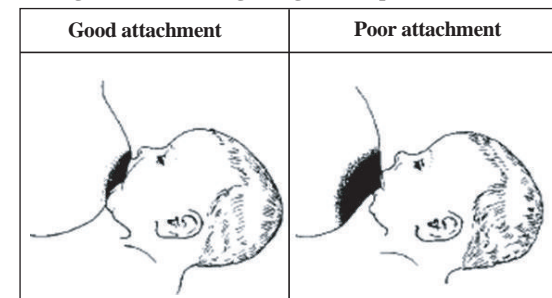
#### The signs of good attachment are:

- The baby's mouth is wide open.
- The baby's lower lip is curled outwards.
- More of the areola is inside the baby's mouth.
- The baby's chin is touching the breast.

#### The signs of poor attachment are:

- The baby's mouth is not wide open.
- The baby's lower lip points forward or is turned inwards.
- Upper areola and lower areola are visible.
- The baby's chin is away from the breast.

Figure 5: External signs of good and poor attachment



Source: WHO 2009

### 2.6.3 Expression of breastmilk (EBM)

Expression of breastmilk means removal of milk from the breast by means other than suckling.

#### Circumstances when a mother needs to express milk manually:

- When a mother goes out for work or any purpose she must leave her milk at home so that other caregivers can feed the baby
- When a premature or low birth weight baby cannot suckle the breast
- When a sick baby has difficulties in suckling
- When the mother's breast is engorged (expression of breastmilk softens the breast and baby can then suckle more easily)
- When the mother has sore and cracked nipples

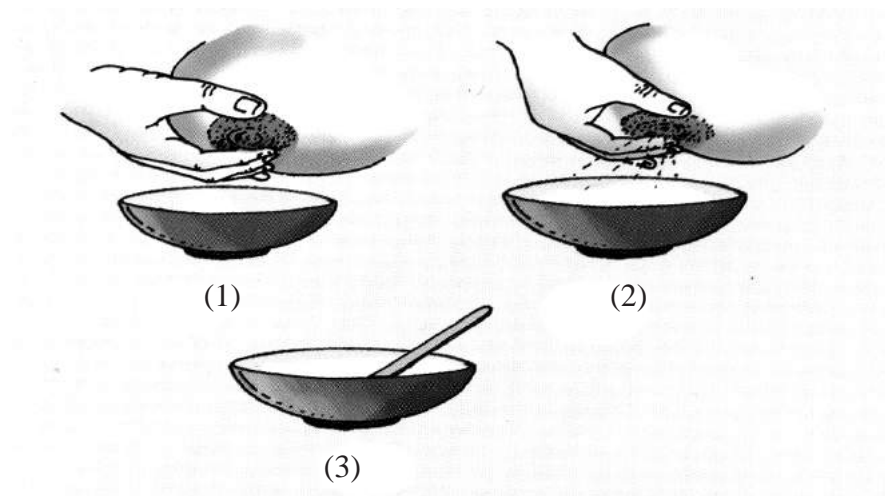
#### Preparation of manual expression of breastmilk:

- First the mother should wash her hands with soap and water.
- A cup with a wide mouth should be selected and washed with soap and warm water.
- After preparing the cup mother should sit comfortably.

### How to express milk manually:

- First the mother should hold her breast, placing her thumb above the areola and all four fingers below the breast. Then she alternately presses and releases the areola by repeatedly applying pressure from thumb and index finger. Milk may not come immediately, but it soon start coming in.
- Pressure needs to be given over the areola. Pressure should not be given on the nipple. Milk not come out by squeezing the nipple or by pulling it.
- Thumb and index finger need to rotate around the areola, pressing all areas of the breast to express milk such as above and below the areola, side by side, and diagonally.

Figure 6: Expression of breastmilk



Source: Alive & Thrive, 2012

### How to feed a baby expressed breastmilk with cup/spoon:

- The mother or caregiver should wash her hands thoroughly with soap and water.
- Baby should be on mother's/caregiver's lap in breastfeeding position.
- An amount of milk that the baby can consume in one sitting should be put in a cup.
- The cup or a spoon should be held gently against the baby's lower lip.
- Cup/spoon should be tilted slightly so that the milk reaches the baby's lip.
- At the touch of the cup/spoon, baby will open his/her mouth and start taking milk using his/her tongue and suckling slowly.

### Method to preserve expressed milk:

- Expressed milk should be covered in a clean pot.
- At normal room temperature, breastmilk remains safe for 6–8 hours.
- In a refrigerator (at 8° C) breastmilk remains safe for 2–3 days. (During feeding it should be warmed by putting the container in a bowl of hot water.)

## 2.7 Contraception during breastfeeding

### 2.7.1 Lactational amenorrhea method (LAM)

- LAM is an important method of family planning. It is available to postpartum women including one who may be unable to obtain modern contraceptives due to social or other reasons. LAM is under the control of the mother herself.
- Suckling brings about the release of some pituitary hormones. Prolactin is one of these, and it suppresses ovulation. The release of prolactin delays the return of menstruation and of fertility after childbirth. This is called lactational amenorrhea. Relying on this suppression to prevent conception is called the lactational amenorrhea method (LAM). All mothers should know about it. They also need to know the limitations of LAM.
- LAM requires exclusive breastfeeding and frequent breastfeeding during daytime and at night.
- It is no longer effective if menstruation returns.
- This method is 98 percent effective for the first six months of following delivery.

Table 2: Lactational Amenorrhea Method (LAM)

| Lactational Amenorrhea Method (LAM)    |   |
|--|---|
| No other method needed if:             | Use other method if:  |
| No menstruation                        | Menstruation has returned                                     |
| and                                    | or  |
| Baby less than six months old          | Baby more than six months old                                 |
| and                                    | or  |
| Baby exclusively breastfed day & night | Other foods and fluids have been introduced before six months |

Source: WHO 2009

### 2.7.2 Other methods

Breastfeeding mothers can also choose the following suitable methods of contraception:

**Non-hormonal methods** are suitable. They have no effect on lactation.

- Intrauterine devices (IUDs) are very suitable.
- Condoms, diaphragms, and spermicides are suitable provided a couple can use them correctly. They may help to supplement the partial protection provided by breastfeeding after the baby is six months old.

### Hormonal methods

- Combined pill (mainly estrogen) has an effect on lactation and reduces breastmilk production. It should not be used within six months of delivery.
- Progesterone-only methods such as Depo-Provera, Norplant, and progesterone-only pills can be used in the first six months if menstruation starts.

## 2.8 Breastfeeding during sickness

(See also section 2.11.5 on Breastfeeding a baby who is ill and section 2.12 on Breastfeeding and special situations–mother's issues.)

- A mother can breastfeed exclusively during any illness except for very few contraindicated conditions, as noted below.

### Contraindication for breastfeeding (cause related to baby)

- The only contraindication is galactosemia. A baby with this condition is unable to metabolize galactose which is the primary sugar in milk.
- Lactose-free milk feeding should be recommended in such a case.

### Contraindication for breastfeeding (cause related to mother)

- Substance abuse, medications (antineoplastics, radiopharmaceuticals), chemotherapy
- Radioactive isotope therapy, antithyroid drugs

## 2.9 Drugs and breastfeeding

Drugs that have been associated with ill effects for some breastfed infants and should be used with caution are:

- |                         |                 |
|-------------------------|-----------------|
| - acebutolol            | - ergotamine    |
| - 5-aminosalicylic acid | - lithium       |
| - atenolol              | - phenindione   |
| - bromocriptine         | - phenobarbital |
| - aspirin (salicylates) | - primidone     |
| - clemastine            | - sulfasalazine |

Tobacco use during breastfeeding is harmful to both mother and baby. The mother should stop use and/or avoid exposing baby to second-hand smoke.

## 2.10 Breastfeeding difficulties and management

### 2.10.1 Sore or fissured nipple

#### Symptoms:

- The mother feels severe nipple pain when the baby is suckling.
- There may be a visible fissure across the tip of the nipple or around the base.
- The nipple may look squashed from side-to-side at the end of a feed, with a white pressure line across the tip.

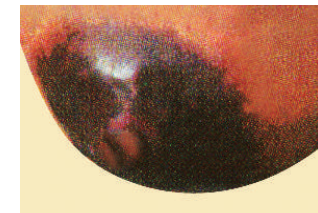
#### Causes:

- The main cause of sore and fissured nipples is poor attachment.
- This may be due to the baby pulling the nipple in and out as he or she suckles and rubbing the skin against his or her mouth.
- It may be due to the strong pressure on the nipple resulting from incorrect suckling.

#### Management:

- The mother should be helped to improve her baby's position and attachment.
- Often, as soon as the baby is well attached, pain becomes less.
- The baby can continue breastfeeding normally. There is no need to rest the breast–the nipple will heal quickly.
- Hind milk can be smeared over the nipple and let to air dry.
- Mother should avoid wearing a tight dress.
- Mother may need a pain killer.

Figure 7: Sore nipple



Source: WHO/UNICEF 2006

### 2.10.2 Engorgement of breast

#### Symptoms:

- The breasts are swollen and edematous.
- The skin is shiny and reddened.
- Usually the whole of both breasts are affected and they are painful.
- The woman may have a fever that usually subsides in 24 hours.
- The nipples may become stretched tight and flat, making it difficult for the baby to attach and suckle.
- The milk does not flow well.

#### Causes:

The most common reason for engorgement is that milk is not removed from the breast, especially in the first few days after delivery when the milk comes in and fills the breast, and at the same time blood flow to the breasts increases, causing congestion.

#### Other common causes include:

- Delayed initiation of breastfeeding
- Infrequent feeds
- Poor attachment
- Ineffective suckling

**Management:**

- If the baby can attach well and suckle, then the mother should breastfeed as frequently as she is willing.
- If the baby is not able to attach and suckle effectively, she should express her milk by hand a few times until the breasts are softer so that the baby can attach better. She should then have him or her breastfeed frequently.
- She can apply warm compresses to the breast or take a warm shower before expressing, which helps the milk to flow.
- She can use cold compresses after feeding or expressing, which helps to reduce the oedema.

**2.10.3 Mastitis****Symptoms:**

Mastitis is a hard swelling in the breast, with redness of the overlying skin and severe pain. Usually only a part of one breast is affected—which is different from engorgement, in which the whole of both breasts are usually affected. The woman has fever and feels ill. Mastitis is most common in the first 2–3 weeks after delivery but can occur at any time.

**Causes:**

Causes include poor attachment, with incomplete removal of milk; unrelieved engorgement; and milk stasis, which results in non-infective inflammation. Infection may supervene if the stasis persists, or if the woman also has a nipple fissure that becomes infected. The condition may then become infective mastitis.

**Management:**

Improve the removal of milk and try to correct any specific cause that is identified.

- Advise the mother to rest, to breastfeed the baby frequently, and to avoid leaving long gaps between feeds. If she is employed, she should take sick leave to rest in bed and feed the baby. She should not stop breastfeeding.
- She may find it helpful to apply warm compresses, to start breastfeeding the baby with the unaffected breast in order to stimulate the oxytocin reflex and milk flow, and to vary the position of the baby.
- She may take analgesics (if available, ibuprofen, which also reduces the inflammation of the breast, or acetaminophen).
- If symptoms are severe, if there is an infected nipple fissure, or if no improvement is seen after 24 hours of improved milk removal, treatment should then include antibiotics for penicillinase-resistant organism (e.g., flucloxacillin). However, antibiotics will not be effective without improved removal of milk.

Figure 8: Mastitis



Source: WHO/UNICEF 2006

**2.10.4 Blocked duct****Symptoms:**

A blocked duct produces a tender, localized lump in one breast, it is firm to hard in consistency.

**Causes:**

- Failure to remove milk from part of the breast, which may be due to infrequent breastfeeds
- Poor attachment
- Tight clothing or trauma to the breast
- Blockage of the duct to one part of the breast by thickened milk

**Management:**

Improve removal of milk and correct the underlying cause.

- The mother should feed from the affected breast frequently and gently massage the breast over the lump while her baby is suckling.
- Some mothers find it helpful to apply warm compresses and change the position of the baby (across her body or under her arm).
- Sometimes after gentle massage over the lump, a string of the thickened milk will come out through the nipple, followed by a stream of milk and rapid relief of the blocked duct.

**2.10.5 Breast abscess****Symptoms:**

An abscess produces a painful swelling in the breast. It may also cause discoloration of the skin and fever.

**Causes:**

Usually secondary to mastitis that has not been effectively managed

**Management:**

- An abscess needs to be drained and treated with penicillinase-resistant antibiotics.
- Mother may continue to feed from the affected breast. Feeding from an infected breast does not affect the baby.
- If suckling is too painful or if the mother is unwilling, she can be shown how to express her milk and advised to let her baby start to feed from the breast again as soon as the pain is less, usually in 2–3 days.
- She can continue to feed from the other breast.



### 2.10.6 Inverted, flat, large, and long nipples

#### *Signs to look for:*

Nipples naturally occur in a wide variety of shapes that usually do not affect a mother's ability to breastfeed successfully. However, some nipples are flat, large, or long, and the baby may have difficulty attaching to them. Most flat nipples are protractile—if the mother pulls them out with her fingers, they stretch, in the same way that they have to stretch in the baby's mouth. A baby should have no difficulty suckling from a protractile nipple. Sometimes an inverted nipple is non-protractile and does not stretch out when pulled; instead, the tip goes in. This makes it more difficult for the baby to attach. Protractility often improves during pregnancy and in the first week or so after a baby is born. A large or long nipple may make it difficult for a baby to take enough breast tissue into his or her mouth.

#### *Causes:*

Different nipple shapes are a natural feature of the breast. Many women with inverted nipples are able to breastfeed without difficulty, probably because the nipple itself plays a relatively small part in the anatomical aspects of suckling, as the infant makes a 'teat' from the surrounding breast tissue as well as the nipple.

#### *Management:*

The same principles apply for the management of flat, inverted, large, or long nipples.

- Any kind of adverse comment should not be made to or in front of the woman—this will reduce her confidence in breastfeeding.
- Explain to the pregnant woman that babies can often suckle without difficulty from nipples of unusual shapes, and that skilled help after delivery is the most important thing.
- Immediately after delivery, the mother should be helped to position and attach her baby.
- The mother should give the baby plenty of skin-to-skin contact near the breast and let the baby try to find his or her own way of taking the breast.
- The mother should keep putting the baby to the breast in different positions and allowing him or her to try. She can touch the baby's lips to stimulate the rooting reflex and encourage the baby to open his or her mouth wider.
- If a baby cannot attach in the first day or two, the mother can express her breastmilk and feed him or her by cup. As a baby grows, his or her mouth soon becomes larger, making it easier to attach to the breast.
- Feeding bottles or dummies, which do not encourage a baby to open the mouth wide, should be avoided.
- For flat or inverted nipples, the mother should be assured that this problem can be solved and the nipple will come to normal shape by itself if she: 1) maintains proper position and attachment, 2) ensures that the child suckles with the areola inside the mouth, not just the nipple 3) breastfeeds frequently.

### 2.10.7 **Candida infection (thrush) in mother and baby**

#### *Symptoms in the mother:*

- Sore nipples with pain continuing between feeds—pain like sharp needles going deep into the breast and not relieved by improved attachment
- A red or flaky rash on the areola, with itching and de-pigmentation

#### *Symptoms in the baby:*

- White spots appear inside the cheeks or over the tongue that look like milk curds but cannot be removed easily.
- Baby may refuse to feed altogether or shows distress when he or she tries to attach and feed, suggesting that the mouth is sore.

#### *Causes:*

This is an infection of the fungus *Candida albicans*, which often follows the use of antibiotics in the baby or in the mother to treat mastitis or other infection.

#### *Management:*

Treatment is with gentian violet or nystatin. If the mother has symptoms, both mother and baby should be treated. If only the baby has symptoms, it is not necessary to treat the mother.

- Tablet Fluconazole 150 mg can be prescribed for the mother.
- Nystatin suspension 100,000 IU/ml can be prescribed for baby. Apply 1 ml by dropper to infant's mouth four times daily after breastfeeds for seven days or as long as the mother is being treated.
- Nystatin cream 100,000 IU/ml can be prescribed for the mother. Apply to nipples four times daily after breastfeeds. Continue to apply for seven days after lesions have healed.

## 2.11 Breastfeeding in special situations (baby's issues)

### 2.11.1 Breastfeeding and the low birthweight baby

- A baby weighing less than 2500 g at birth is considered low birthweight (LBW).
- A baby less than 1500 g is very low birthweight.
- A LBW infant is at higher risk of early growth retardation, infection, developmental delay, and death during infancy and childhood.
- Intrauterine growth restriction (IUGR), defined as a slower than normal rate of growth within the womb, is usually responsible for a baby being small for gestational age (SGA). A baby that is SGA has weight for gestation less than the 10th percentile.
- LBW can also be a consequence of preterm birth (before 37 completed weeks of gestation).
- Appropriate care of LBW infants, including their feeding, temperature maintenance (especially through skin-to-skin contact e.g. kangaroo care method), hygienic cord

and skin care, and early detection and treatment of infections can substantially reduce morbidity.

- For LBW infants who are not able to breastfeed effectively, feeds have to be given by an alternative oral feeding method (cup/spoon/direct expression into mouth) or by intra-gastric tube feeding.
- If the mother is unable to breastfeed her LBW infant, options include:
  - Expressed breastmilk from his or her own mother
  - Donor breastmilk

**Figure 9: Low birthweight baby feeding**



Source: WHO 2009

### 2.11.2 Breastfeeding and twins

- Early effective suckling can ensure adequate milk supply for both infants.
- Mothers may need help to find the best way to hold two babies to suckle, either at the same time or one at a time.
- A mother may like to give each baby its own breast, or to vary the side. Help may be needed to achieve good attachment at the breast.
- Holding one or both babies in the underarm position for feeding, and supporting the babies with pillows or folded clothes, is often helpful.
- It is important to build the mother's confidence that she can produce enough milk for two, to encourage relatives to help with other household duties; and to help her to avoid trying to feed the babies with formula milk.

**Figure 10: Mother breastfeeding twins**



Source: Adapted from UNICEF 2011

### 2.11.3 Baby with cleft lip and/or palate

Attachment and suckling may be difficult because of the anatomical gap.

#### **Management:**

- The mother can be helped to hold the baby in an upright sitting position at the breast, with the baby's legs on either side of the mother's thigh.
- This makes swallowing easier and may help the baby to breastfeed, fully or partially.
- The mother can express her milk and feed it to the baby by cup or spoon until surgical help is available.
- The baby should be referred for surgery, which usually takes place after some months in one or more stages.

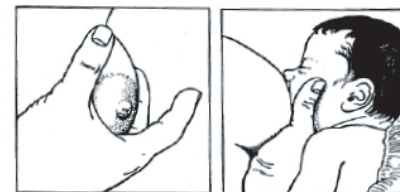
### 2.11.4 Baby with muscular weakness

Babies with Down syndrome or cerebral palsy have difficulty attaching to the breast and suckling because of their muscular weakness.

#### **Management:**

- The mother should be shown how to help the baby attach to the breast by using the Dancer-hand position.
- She should support the baby's chin with 3 fingers below the breast rather than 4, it will create a U-shape with thumb and forefingers, at the same time she should also support the head of the baby to keep the mouth close to the breast.
- The mother can express her milk and give some feeds by cup or tube.
- The mother will need extra support and counseling to bond with her baby, to feel that she is doing the best for him or her, and to persist.

**Figure 11: Dancer-hand position**



Source: WHO 2009, [www.childrensmn.org/manuals/pfs/nutr/018723.pdf](http://www.childrensmn.org/manuals/pfs/nutr/018723.pdf)

### 2.11.5 Breastfeeding a sick baby

- During a child's illness, the mother should increase the frequency and duration of breastfeeds.
- If a breastfed baby cannot suck properly due to illness, the mother should express milk and continue to feed the child with a spoon and/or cup.
- If a breastfed baby is hospitalized, mother and baby should be kept together.



## 2.12 Breastfeeding and special situations (mother's issues)

### 2.12.1 Breastfeeding after caesarean section

#### *Management:*

- Mother should continue to feed her baby on demand.
- She will need help for a few days to hold the baby.
- She will learn how to breastfeed lying down, and to turn over and to position herself comfortably for feeds.
- Hospital staff and family members can help her.
- Most mothers can breastfeed normally after a caesarean delivery if they are given appropriate help.
- If a baby is too ill or too small to feed from the breast soon after delivery, the mother should be helped to express her milk to establish the supply.

### 2.12.2 Breastfeeding and HIV

The latest WHO guidelines on breastfeeding and HIV (as excerpted from the 2010 source below) are as follows:

#### **i. Ensuring mothers receive the care they need**

Mothers known to be HIV-infected should be provided with lifelong antiretroviral therapy or antiretroviral prophylaxis interventions to reduce HIV transmission through breastfeeding according to WHO recommendations.

#### **ii. Which breastfeeding practices and for how long**

Mothers known to be HIV-infected (and whose infants are HIV uninfected or of unknown HIV status) should exclusively breastfeed their infants for the first 6 months of life, introducing appropriate complementary foods thereafter, and continue breastfeeding for the first 12 months of life. Breastfeeding should then only stop once a nutritionally adequate and safe diet without breast milk can be provided.

#### **iii. When mothers decide to stop breastfeeding**

Mothers known to be HIV-infected who decide to stop breastfeeding at any time should stop gradually within one month. Mothers or infants who have been receiving ARV prophylaxis should continue prophylaxis for one week after breastfeeding is fully stopped. Stopping breastfeeding abruptly is not advisable.

#### **iv. What to feed infants when mothers stop breastfeeding**

When mothers known to be HIV-infected decide to stop breastfeeding at any time, infants should be provided with safe and adequate replacement feeds to enable normal growth and development. Alternatives to breastfeeding include:

*For infants less than six months of age:*

- Commercial infant formula milk as long as home conditions outlined in guideline #5 below are fulfilled,
- Expressed, heat-treated breast milk (see guideline #6 below), Home-modified animal milk is not recommended as a replacement food in the first six months of life.

*For children over six months of age:*

- Commercial infant formula milk as long as home conditions (outlined in guideline #5) are fulfilled,
- Animal milk (boiled for infants under 12 months), as part of a diet providing adequate micronutrient intake. Meals, including milk- only feeds, other foods and combination of milk feeds and other foods, should be provided four or five times per day.

*All children need complementary foods from six months of age.*

#### **v. Conditions needed to safely formula feed**

Mothers known to be HIV-infected should only give commercial infant formula milk as a replacement feed to their HIV-uninfected infants or infants who are of unknown HIV status, when specific conditions are met:

- a. safe water and sanitation are assured at the household level and in the community, and,
- b. the mother, or other caregiver can reliably provide sufficient infant formula milk to support normal growth and development of the infant; and,
- c. the mother or caregiver can prepare it cleanly and frequently enough so that it is safe and carries a low risk of diarrhoea and malnutrition; and
- d. the mother or caregiver can, in the first six months, exclusively give infant formula milk; and
- e. the family is supportive of this practice; and
- f. the mother or caregiver can access health care that offers comprehensive child health services

#### **vi. Heat-treated, expressed breast milk**

Mothers known to be HIV-infected may consider expressing and heat-treating breast milk as an interim feeding strategy:

In special circumstances such as when the infant is born with low birth weight or is otherwise ill in the neonatal period and unable to breastfeed; or

- When the mother is unwell and temporarily unable to breastfeed or has a temporary breast problem such as mastitis; or
- To assist mothers to stop breastfeeding; or
- If antiretroviral drugs are temporarily not available.

#### **vii. When the infant is HIV-infected**

If infants and young children are known to be HIV-infected, mothers are strongly encouraged to exclusively breastfeed for the first six months of life and continue breastfeeding as per the recommendations for the general population that is, up to two years or beyond.

*Source: WHO/UNICEF/UNFPA/UNAIDS. Guidelines on principles and recommendations for Infant Feeding in the Context of HIV and a Summary of Evidence. Geneva: World Health Organization; 2010.*

### 2.12.3 Breastfeeding and hepatitis

In case of Hepatitis A, B, or C infection of the mother, the baby can breastfeed.

### 2.12.4 Breastfeeding and tuberculosis (pulmonary)

- If mother and baby are infected, mother should continue breastfeeding and both should be treated for TB.
- If only the mother is infected, she should be isolated from the baby until two weeks after her treatment begins and she is no longer contagious. The mother should use a mask. The baby should receive mother's expressed milk and should be given INH prophylaxis.

### 2.12.5 Breastfeeding and chicken pox

- If both mother and baby have active chicken pox, mother should continue to breastfeed and she and her baby should be isolated together.
- If mother is ill but baby has not been exposed, mother should be isolated until she is no longer contagious and she should express her milk for the baby.

## 2.13 Breastfeeding and working mothers

The most common reason for a mother being separated from her baby for part of the day is because she is employed outside the home.

#### *Management:*

- She should be encouraged to breastfeed the baby as much as possible when she is at home and to consider expressing her milk to leave for someone else to give to her baby.
- Mother can take the baby to the workplace if possible.

#### *How to maintain milk supply:*

She should:

- Breastfeed her baby whenever she is at home, such as at night and weekends
- Sleep with her baby, so that she can breastfeed at night and early in the morning
- Express milk in the morning before she leaves for work
- Express her milk while she is at work to keep up the supply. She can refrigerate the milk

## 2.14 Maternity leave and the newborn

- WHO recommends six months of maternity leave for all working mothers so that they can remain close to their babies during the critical period of exclusive breastfeeding.
- Bangladesh is one of the early adopters of this recommendation.
- A Maternity Leave Law was passed in January 2010 mandating all government employees to receive full pay with leave for six months following the birth of an infant.

## 2.15 Questions about insufficient breastmilk

### 2.15.1 Mother's perceived insufficiency of low breastmilk production

*Symptoms that make a mother think that her breastmilk is insufficient:*

- The baby cries a lot and seems not to be satisfied with feeds.
- The baby wants to feed very often or for a long time at each feed.
- The mother's breasts feel soft.
- The mother is not able to express her milk.

*Overview of causes:*

- The most common difficulty mothers describe is a feeling that they do not have enough milk.
- In some cases, the baby is often getting all the milk that he or she needs, but the mother still perceives that her milk supply is insufficient.
- In some cases, a baby does have low intake and the breastmilk is insufficient for his or her needs.
- Occasionally, this is because the mother has a physiological or pathological problem causing low breastmilk production.
- However, the reason for low intake is usually faulty technique or pattern of feeding. If the breastfeeding technique or pattern improves, the baby's intake increase.

If the baby has low milk intake, it is necessary to find out if this is due to faulty breastfeeding technique, or low breastmilk production, or perception of low milk production.

If the baby's intake is adequate, it is necessary to understand the signs that are worrying the mother.

The most common reasons for a baby not getting enough breastmilk are related to poor technique or mismanagement of breastfeeding, which can be overcome.

### 2.15.2 Low breastmilk intake

*Signs:*

The two reliable signs that a baby is not getting enough milk are:

- Poor weight gain (baby is not gaining weight according to expected growth curve)
- Low urine output (baby is not passing dilute urine 6 or more times in 24 hours)

#### **Poor weight gain**

- Soon after birth, a baby may lose weight for a few days. (It is normal for baby to lose no more than 7 percent of birth weight in the first week.)
- Most recover their birth weight by the end of the first week if they are healthy and feeding well. (Baby gains 20–35 g (.7 – 1.2 oz) weight per day by day five.)
- The mother should schedule a weight check within 5–7 days after birth.
- All babies should recover their birth weight by two weeks of age.
- A baby who is below his or her birth weight at the end of the second week needs to be assessed.

- From two weeks, babies who are breastfed may gain from about 500 g to 1 kg or more each month.
- In the case of poor weight gain, the mother's techniques and pattern of breastfeeding and the mother-baby interaction should be assessed to find out the cause.

### **Low urine output**

- An exclusively breastfed baby who is taking enough milk usually passes dilute urine 6–8 times or more in 24 hours.
- Baby usually first urinates by eight hours after birth.
- By day four baby passes clear or pale urine.
- If a baby is passing urine fewer than six times a day, especially if the urine is dark yellow and has strong smell, he or she is not getting enough breastmilk.

### **Lack of stools**

- Consistency and colour of stools can also be a useful indicator of the adequacy of breastfeeding.
- Baby should pass his/her first stool by eight hours after delivery.
- In early weeks a stool is generally passed with each feed.
- Lack of stools is a key indicator of inadequate calorie intake (although some babies do not pass stool for a number of days in later weeks).

#### *Causes related to breastfeeding:*

- *Delayed initiation* of breastfeeding
- *Poor attachment*
- Baby wants to feed very often (more than twice every hour, with no long intervals between feeds).
- Baby suckles for a long time at each feed (more than one half hour)—unless newborn or low birth weight baby, in which case this is normal.
- *Infrequent feeds*, baby is fed fewer than 8 times in 24 hours in the first 8 weeks, or fewer than 5–6 times in 24 hours after 8 weeks.
- *Short feeds*, if a mother is in a hurry, the baby may not take as much milk as needed, especially the fat-rich hind milk.
- *Using bottles or pacifiers* that replace suckling at the breast may interfere with attachment and the baby may suckle less effectively.
- *Giving other foods or drinks*

#### *Causes related to psychological factors of the mother:*

- A mother may be depressed, lacking in confidence, worried, or stressed.
- She may reject the baby or dislike the idea of breastfeeding.
- These factors do not directly affect her milk production, but can interfere with the way in which she responds to her baby, so that she breastfeeds less; this in turn can result in the baby being at the breast/suckling less and failing to stimulate milk production.

#### *Causes related to baby's condition:*

- A baby who is ill may fail to breastfeed well and fail to stimulate milk production.

- A premature baby may have trouble breastfeeding.
- A baby with a congenital abnormality, such as a palate defect, heart condition, or kidney abnormality, may have trouble breastfeeding.

### **2.15.3 Management of perceived insufficiency of low breastmilk production and breastmilk supply**

- A doctor may use counseling skills to listen and learn.
- A feeding history should be taken to understand the difficulty, particularly if there are psychological factors affecting breastfeeding.
- A breastfeed should be observed, checking the baby's attachment.
- The mother's physical condition and the baby's condition and weight should also be noted.
- A doctor should decide if low milk intake is actually a problem, or perceived insufficiency is the problem.

## **2.16 Common breastfeeding problems related to baby**

### **2.16.1 Crying**

Crying is a normal phenomenon for a child. If it is excessive, the baby should be evaluated clinically to determine the cause.

#### **Normal crying-**

- Infants in the first year of life often cry when they want attention
- Hunger is usually not the main reason for crying
- If urine output is six or more times in 24 hours and weight of the child is normal, crying is not due to hunger related to low milk supply

#### **Excessive crying-**

The baby cries excessively and is difficult to comfort. The pattern of crying may suggest the cause.

#### *Cause:*

- Pain or illness may be the cause if a baby suddenly cries more than before
- Hunger due to sudden growth (sometimes called a "growth spurt") is common at ages two weeks, six weeks, and three months. If the baby feeds more often for a few days, the supply of breastmilk will increase and the problem will resolve
- Gastroesophageal reflux can cause pain; the baby may cry after feeds, often on lying down, and may vomit a large amount of the feed (more than the slight regurgitation that is very common)
- A baby with colic often cries at certain times of day, typically in the evening

#### *Management:*

- If a specific cause can be identified, such as pain or illness, it should be treated
- Holding the baby upright may help reflux, or medication may be suggested
- For colic, the mother can carry and rock the baby with gentle pressure on the abdomen. She may need reassurance that the crying will lessen as the baby grows.

### 2.16.2 Infantile colic

A colicky infant is one who is healthy but cries more than three hours a day for more than three days a week and for more than three weeks.

The problem usually starts within the first week of birth, reaches a peak at the age of 4–6 weeks, and improves after 4–5 months of age in 80 percent cases.

#### *Cause:*

The cause of colic is unknown but some factors may precipitate it, such as: erratic feeding, lack of burping, protein allergy from formula feed or cow's milk, increased sensitivity to colonic distension, and gastro-esophageal reflux.

#### *Management:*

Counsel and reassure the parents about the nature of the illness. The baby should be fed in upright position and burped to promote the escape of swallowed wind.

### 2.16.3 Vomiting

Whenever a baby presents with vomiting one should consider some probable causes such as:

- Possetting
- Erratic feeding
- Lack of burping
- Gastro-esophageal reflux, infantile hypertrophic pyloric stenosis

If the baby has vomiting along with abdominal mass or diffuse abdominal tenderness, other possibilities should be considered—including acute gastroenteritis, acute hepatitis, or intestinal obstruction.

Any physiological or infectious cause should be treated appropriately. In case of possetting, erratic feeding, or lack of burping, no medication is required.

### 2.16.4 Refusal to breastfeed

#### *Symptoms:*

- The baby refuses to breastfeed.
- The baby may cry.
- The baby arches his or her back.
- The baby turns away when put to the breast.
- The mother may feel rejected and frustrated and be in great distress.

#### *Causes:*

There may be a physical problem such as:

- Illness, an infection, or a sore mouth (for example, thrush)
- Pain due to, for example, bruising after a traumatic delivery or gastro-esophageal reflux
- Sedation, if the mother received analgesics during labour

The baby may have difficulty or frustration with breastfeeding because of:

- Sucking on a bottle or pacifier
- Difficulty in attaching to the breast

#### *Management:*

If a cause is identified, it should be treated or removed:

- The mother can be helped to improve her breastfeeding technique and to avoid the use of bottles and pacifiers.
- The mother could consider how she can reduce the time she spends away from the baby, or avoid other changes that may be upsetting to the baby.
- She can keep her baby close, with more of skin-to-skin contact.
- She can offer her breast whenever the baby shows signs of interest in suckling.

## 2.17 Risk factors for difficulties with breastfeeding (general)

### Maternal risk factors for difficulties with breastfeeding

- Previous breastfeeding difficulty.
- Anesthesia or surgery during delivery.
- Separation from infant.
- Damaged nipples.
- Unrelieved fullness or engorgement.
- Perceived insufficient milk.
- Breast and nipple condition, such as flat or inverted nipples.

### Baby's risk factors for difficulties in breastfeeding

- Ineffective attachment and inability to suck.
- Use of pacifier or bottle.
- Persistent sleepiness or irritability.
- Long intervals between feeds.
- Baby is low birthweight.
- Twin/multiple birth.
- Cleft palate or other oral anomaly.

## 2.18 Age groups at risk for poor breastfeeding practices

### 0 to 48 hours after birth

#### *Why at risk:*

- The newborn is adapting to a new environment and needs support to learn how to attach to the mother's breast and suck effectively.
- Mothers are not fully knowledgeable about how to feed the newborn, including when to start breastfeeding, how to position and attach the baby, how many times to feed, importance of colostrum, and the dangers of pre-lacteal feeds.
- Mothers and family members are not confident that colostrum alone is enough for the baby's nutrition. They try to feed water and other products that are harmful.
- Some mothers need support but don't receive it from birth attendants or family members because they are unaware of the importance of initiating breastfeeding immediately after birth and how to help ensure effective suckling.



**Mother/family members should be counseled on:**

- (During antenatal care visits) importance of initiating breastfeeding putting child to the breast immediately after birth (within first hour); importance of colostrum; not giving liquids or even water.
- Feeding techniques (including demonstration) covering position and attachment, manual expression of breastmilk, and ways to prevent and manage breastfeeding difficulties.
- Assessing and managing any difficulties in baby's suckling or breast problems
- Maintaining frequent suckling to meet the baby's needs and maintaining a good supply of breastmilk.
- How to maintain as well as increase breastmilk supply in the first six months
- Importance of the fact that no other product is needed except breastmilk.

**2 to 3 Months of Age***Why at risk:*

- Mothers lack knowledge about the importance of and techniques for maintaining and increasing milk supply as the baby grows, so that exclusive breastfeeding is maintained for six completed months.
- Mothers doubt the adequacy of their milk supply. When their babies cry, they believe they are hungry. They don't know how to assess adequacy of milk supply and want to feed other products.

**Mother/family members should be counseled on:**

- Correct position and attachment.
- How to express breastmilk.
- How to assess adequate milk consumption (e.g., baby urinates at least 6 times in 24 hours, sleeps well, and gains weight).
- Importance of feeding on demand.
- Importance of feeding from one breast as much as possible before moving to the next breast.
- Importance of family support in maintaining and continuing breastfeeding.
- Disadvantages of bottle-feeding and importance of exclusive breastfeeding for the first six months.
- How to express milk manually and store hygienically for mothers who leave the home for work or for other reasons.

**2.19 Laws in Bangladesh protecting the breastfeeding mother and baby****2.19.1 Baby-Friendly Hospital Initiative (BFHI)**

- The Baby-Friendly Hospital Initiative (BFHI) was launched in 1992 with the aim of transforming maternity facilities to provide this standard of care. Without the

BFHI, hospital and clinic practices often undermine breastfeeding, with adverse consequences for infant health.

- The baby-friendly approach has been shown to be effective in increasing exclusive breastfeeding rates.
- Hospitals become 'Baby-Friendly' by implementing the 'Ten Steps to Successful Breastfeeding' (see box)

**Box A : The Ten Steps to successful breastfeeding**

Hospitals should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within one half hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they are separated from their infants.
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated
7. Practice rooming-in: allow mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Source: [www.unicef.org/programme/breastfeeding/baby.htm](http://www.unicef.org/programme/breastfeeding/baby.htm) (accessed June 2014)

**2.19.2 Protection of new mothers**

As mentioned above in section 2.14, a Maternity Leave Law was passed in January 2010 in Bangladesh mandating all government employees to receive full pay with leave for six months following the birth of a baby.

## Section 3

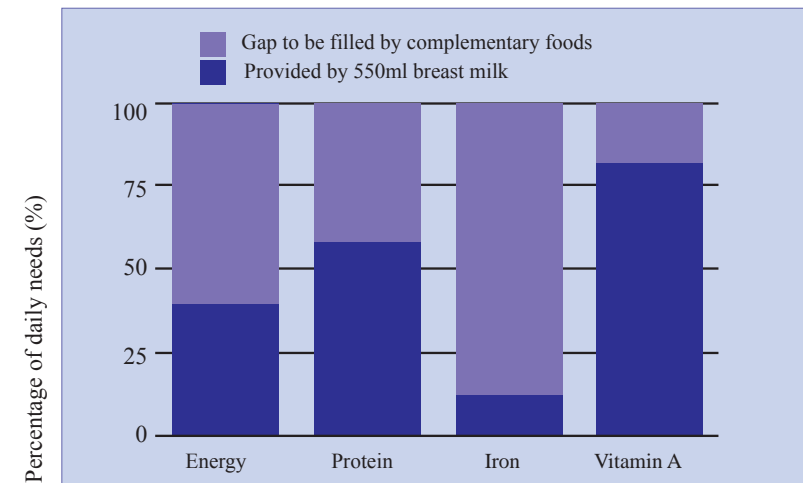
# COMPLEMENTARY FEEDING



### 3.1 Definition of Complementary Feeding (CF)

- Complementary feeding refers to the introduction of foods in addition to breastmilk after children complete six months of age (181 days).
- These other foods are called complementary foods because they are additional or complementary to breastfeeding
- Complementary foods should provide sufficient energy, protein, and micronutrients to cover a child's energy and nutrient gaps, so that together with breastmilk, they meet all of the child's needs (see figure 12).
- During the first 18 months of complementary feeding (following six months of exclusive breastfeeding), the young child gradually becomes accustomed to eating family foods. However, breastfeeding continues to be an important source of nutrients and a source of protective factors until the child is at least two years old. During the months when complementary foods are introduced, too much complementary food can displace breastmilk and too little will not meet the child's needs.

Figure 12: Gap to be filled by complementary foods for breastfed child 12–23 months



Source: WHO 2009

### 3.2 Importance of complementary feeding

- Breastmilk alone is not adequate to meet the needs of a growing child after six months.
- Age-appropriate complementary foods are needed after six months.
- As children grow rapidly during this period, they require different varieties of foods, larger amounts of foods, and foods of different consistency, and need to be fed using different techniques.



### 3.3 Ten guiding principles for complementary feeding

The box below shows the guiding principles for complementary feeding of the breastfed children.

#### Box B. Guiding principles for complementary feeding of the breastfed child

1. Practice exclusive breastfeeding from birth to six months of age and introduce complementary foods beginning at seventh months of age (181 days) while continuing to breastfeed.
2. Continue frequent breastfeeding on-demand until two years of age or beyond.
3. Practice responsive feeding, applying the principles of psychosocial development.
4. Practice good hygiene and proper food handling by washing caregivers' and children's hands before food preparation and feeding, storing foods safely, and serving foods immediately after preparation.
5. Starting at seven months (181 days) of age, increase the quantity of solid and semi-solid foods as the child gets older, while maintaining frequent breastfeeding.
6. Change the consistencies or texture of foods as the infant grows older, adapting to the infant's requirements and abilities.
7. Increase the number of times that the child is fed complementary foods as the child gets older.
8. Feed a variety of nutrient-rich foods to ensure that all nutrient needs are met.
9. Use vitamin-mineral supplements for the infant as needed.
10. During illness, increase fluid intake through more frequent breastfeeding, and encourage the child to eat soft, varied and child's favorite foods. After illness, give food more often than usual and encourage the child to eat more.

Source: PAHO/WHO 2002

### 3.4 Physiological basis of complementary feeding

The ability to consume "solid" food requires maturation of the neuromuscular, digestive, renal, and immune systems. Below describes the physiological development of the child from the seventh month (181 days) – 23 completed months.

#### *Neuromuscular coordination:*

- Maturation of the neuromuscular system influences the timing of the introduction of "solid" foods and the ability of infants to consume them.
- Before four months, infants do not have the neuromuscular coordination to form a food bolus, transfer it to the oropharynx, and swallow it.
- Head control and back support are immature and make it difficult for infants to maintain a position for successful ingestion and swallowing of semisolid foods in early months.
- Babies start to bring objects to their mouth at about five months of age, and

development of the "munching reflex" at this time permits consumption of some solid foods regardless of whether or not teeth have appeared.

- By about eight months, most infants can sit unsupported, their first teeth may have appeared, and they have sufficient tongue flexibility to enable them to swallow thicker boluses of food.
- Soon after, infants have the manual skills to feed themselves, drink from a cup using two hands, and eat family foods.
- It is essential to encourage infants to develop eating skills, such as chewing and bringing objects to the mouth.

#### *Digestion and absorption:*

- The secretory mechanism i.e. gastric intestinal, and pancreatic digestive enzymes are not developed in infants as they are in adults.
- During early infancy the secretion of bile salts is only marginally adequate to permit micelle formation, and the efficiency of fat absorption is lower than in childhood than in adulthood.
- Bile-salt-stimulated lipase, present in breastmilk but absent from commercial formula, may in part compensate for this deficiency. By about four months, gastric acid assists gastric pepsin to digest protein fully.
- Although pancreatic amylase begins to make an effective contribution to the digestion of starches only at the end of the first year, most cooked starches are digested and absorbed almost completely by the time adapted family foods are introduced into the infant's diet. At about six months, the digestive system is sufficiently mature to efficiently digest starch, protein, and fat in the non-milk diet.
- Infants have a small gastric capacity (about 30 ml/kg body weight). Thus, if foods are too bulky and of low energy density, infants are sometimes unable to consume enough to satisfy their energy and nutrient requirements.
- Complementary foods therefore need to have a high energy and micronutrient density and should be offered as small, frequent meals.

#### *Immune system:*

- The development and maintenance of an effective mucosal barrier in the intestine is an essential defense mechanism against pathogens.
- Human milk contains a wide range of factors, which stimulate the development of active immune factors and help to prepare the gastrointestinal tract for the ingestion of transitional foods. These factors are absent in commercial formula.
- The non-immunological defense mechanisms that help protect the intestinal surface against microorganisms, toxins, and antigens include gastric acidity, mucus, intestinal secretions, and peristalsis.
- The relatively poor defenses of the young infant's digestive tract, together with reduced gastric acidity, contribute to the risk of injury to the mucosa by foreign food and microbiological proteins this can cause direct toxic or

immunologically mediated damage. Some foods contain proteins that are potentially antigenic, such as soya protein, gluten (present in some cereals), cow's milk, egg and fish proteins are associated with enteropathy.

- All of these food can be safely started after six months, however.

### 3.5 Characteristics of appropriate complementary foods

In general, complementary foods should be:

- Appropriate in type to provide sufficient supply of energy and nutrients and not too sweet, salty, or spicy.
- Appropriate in amount to fulfill needs but not too much to displace breastfeeding if the child reduces suckling.
- Appropriate in consistency.
- Appropriate in frequency to match child's need for sufficient energy and nutrients and small stomach size.
- Appropriate in feeding style to teach the child how to eat nutritious family foods, encourage self-feeding, encourage mothers/caregiver to make eye contact with the child, praise every bite, observe self-feeding, encourage and motivate child's interest in healthy foods.

### 3.6 Importance of hygiene and complementary foods

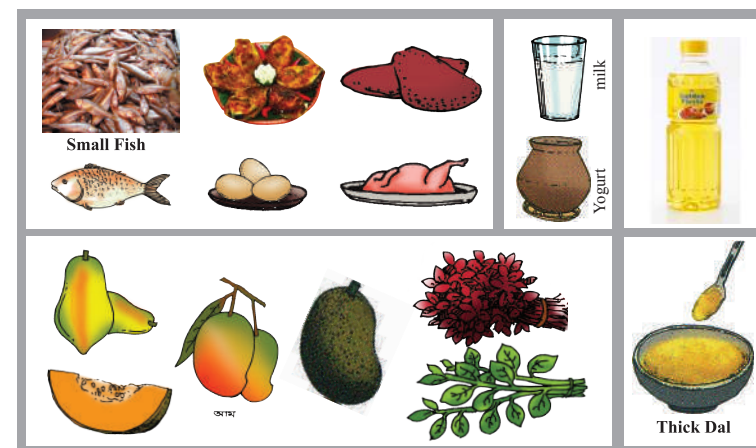
- To protect a child from diseases, the mother or caregiver should always wash hands with water and soap before preparing food or feeding the child.
- Food should be prepared and stored hygienically (especially, food should be cooked thoroughly and should not be kept at room temperature for more than two hours).
- Drinking water should be treated at the point of use with an effective method and stored in an appropriate container.

### 3.7 Complementary food diversity

- To improve the content of various nutrient and density of nutrients in the young child's diet, WHO recommends four or more different types of foods to be fed at least once in a day from six completed months on wards.
- The richest sources of many different nutrients and high density calories are found in these foods:
  - Rice/bread
  - Animal source foods (Meat, Fish, Chicken, Egg)
  - Milk and dairy products
  - Dark green or bright yellow and orange colored fruits and vegetables
  - Pulses/Dal/Lentils

- Ghee/Butter/Oil/Nuts and Oil seeds
- Offering different varieties of foods also encourages the children to eat better and more quantities.

Figure 13: Varieties of food



Source: Alive & Thrive, 2012

### 3.8 Recommended schedule of complementary feeding

At different ages, too much complementary food can displace breastmilk and too little will not meet the child's needs. Age-wise guidance on texture, frequency, and amount of complementary food is shown in table 3.

Table 3: Age appropriate recommended schedule of complementary feeding

| Age  | Energy needed per day in addition to breastmilk | Texture   | Frequency   | Amount of food an average child will usually eat at each meal                    |
|--|---|---|---|--|
| 6–8 months   | 200 kcal per day                                | Start with thick payes/firmi/porridge, well mashed foods, continue with mashed family foods | 2 meals per day depending on the child's appetite and 1–2 snacks may be offered | Start with 2–3 table spoonfuls per feed, increasing to one-half bowl (of 250 ml) |
| 9–11 months  | 300 kcal per day                                | Finely chopped or mashed foods and foods that baby can pick up                              | 3 meals per day depending on the child's appetite and 1–2 snacks may be offered | One-half of a 250 ml bowl  |
| 12–23 months   | 550 kcal per day                                | Family foods, chopped or mashed if necessary  | 3 meals per day depending on the child's appetite and 1–2 snacks may be offered | Full 250 ml bowl   |
| The amounts assume an energy density of the meal is about 0.8 – 1 Kcal/g |   |   |   |  |

Source: Adapted from WHO 2009

### 3.9 Responsive feeding

- Feed infants directly and assist older children when they feed themselves. Feed slowly and patiently and encourage children to eat, but do not force them.
- If a child refuses any food, experiment with different food combinations, tastes, textures, and methods of encouragement.
- If a child loses interest easily during meals, minimize distractions during this time.
- Remember that feeding is a time of learning for the child and the mother or caregiver should make eye contact with the child and express encouragement and affection.

### 3.10 Feeding during and after illness

A child who is sick needs special attention to feeding.

- Breastfeed a sick child frequently.
- During illness, do not stop feeding solid foods.
- Give favorite and nutritious foods.
- Give small, frequent feeds.
- During recovery, increase number of meals and amount of food per meal for 10–15 days or until the child regains weight.

### 3.11 Feeding a child with poor appetite

The most common difficulty reported by mothers and caregivers is a child's poor appetite or refusal to eat. Doctors/health providers should assess the factors and practices underlying this condition. Poor appetite or perception of poor appetite in a child can usually be attributed to two main factors:

- Mother/caregiver's feeding practices are not responsive to the child's needs, likes, and dislikes, or appropriate to the development stage.
- Child has tropical enteropathy, gastrointestinal tract infection, or is otherwise ill so that his/her appetite is depressed.

Once the underlying factors are identified through an assessment checklist, reasons for poor appetite or refusal to eat can be addressed.

*Mother/caregivers should counselled on the following points to manage poor appetite:*

- Offer a variety of foods because child will refuse to eat if is given the same food every time.
- Start with mashed foods then gradually increase consistency and texture.
- Feed when the child is hungry.

- Never force feed. Take enough time to feed the child patiently.
- Offer child's favorite nutritious foods.
- As child's stomach size is small, the child's stomach should not be filled with water, juice, chips and chocolates. This will reduce child's appetite.
- Maintain eye contact to encourage eating and praise the child with each mouthful.
- Mother/caregiver's feeding practices need to be responsive to the child's needs, likes, and dislikes.
- If the child has gastrointestinal or any other infection, his/her appetite will reduce. The mother should be careful to maintain good hygiene during food preparation and storage and while feeding the child. She should wash her hands with soap and water before preparing food and before feeding the child.
- Encourage children's self-feeding if they want to take food themselves.
- Don't allow the child to play with toys during meal time as this will reduce interest in eating.

### 3.12 Complementary feeding difficulties

Each child needs to be taught how to eat solid and semi-solid foods with patience and encouragement. Problems associated with complementary feeding are rarely due to medical reasons.

#### **Causes:**

- Lack of active and responsive feeding of the child (often due to mother's multiple duties and/or due to care being passed to an older sibling)
- Anatomical difficulties (for example, a severe cleft palate or esophageal atresia) or more general illness
- Minor infections, such as cold and blocked nasal passages
- Intestinal infection
- Gastro-esophageal reflux disease (which can also make feeding difficult, affect weight gain, and cause great stress for parents)
- Children 6 to 23 months of age are growing rapidly and feeding patterns need to keep up with their developmental milestones. Emotional and social factors can also cause feeding problems.

#### **Some common symptoms of feeding difficulties are:**

- |                                   |                             |
|-----------------------------------|-----------------------------|
| - Refusing food                   | - Regurgitating or vomiting |
| - Lack of appetite                | - Diarrhoea                 |
| - Crying due to colic             | - Abdominal pain            |
| - Crying before or after food     | - Constipation              |
| - Failing to gain weight normally | - Behavioral problems       |

### 3.13 Age groups at risk of poor complementary feeding practices

#### 7 months of Age

*Why at risk:*

- Breastmilk alone is not enough at this age and a child's rate of growth will decline rapidly if appropriate complementary foods are not given.
- Mothers and caregivers have knowledge about the correct age for starting solid foods but lack knowledge about the quality and quantity of complementary foods.
- Breastmilk supply can decline when children start complementary feeding.
- Children become ill frequently at this age and need special attention for continued breastfeeding and proper complementary feeding.
- After illness, children need to be fed more frequently and extra food for 1–2 weeks to recover. Otherwise they are likely to become ill again.

*Mothers/family members should be counseled on:*

- Continued breastfeeding is an important source of nutrients until two years of age, but semi-solids foods need to be added
- How to give proper amounts, consistency, frequency of food, and varieties of available food, including animal foods every day or as often as possible
- Continued breastfeeding with one-half bowl (250 ml size) of mashed or semi-solid family food, including different varieties of food, twice in a day plus 1-2 nutritious snacks
- The techniques for improving a child's interest in eating. If not encouraged properly and if not given appetizing, healthy foods, children can refuse to eat.
- The importance of handwashing with soap before food preparation and feeding, as well as keeping water and soap near the place of food preparation and feeding
- Increasing breastfeeding and continuing with complementary feeding during illness; also increasing the amount and variety of foods after each illness for complete recovery

#### 9 months of Age

*Why at risk:*

- As the child's capacity and skills develop, the consistency, amount, and type of feeding methods should change at about 9 months of age, but most mothers are not aware of this.
- The child is becoming independent with clear likes and dislikes, but mothers and caregivers may not encourage this at feeding time.
- The child likes to feed him/herself and this is important for the child's brain development and learning. However this is often not encouraged.
- This is a peak age for frequent illnesses and feeding needs special attention.

*Mothers/family members should be counseled on:*

- Family members can provide assistance with household chores so that mothers take time to feed the child patiently, taking enough time, and teaching the child to feed him/herself.
- Importance of maintaining the child's healthy appetite and interest in eating; how to feed responsively based on the child's interest and ability.
- Importance of handwashing with soap, for both mother and child, to prevent illness.
- How to feed the child during illness and after illness, so that the child recovers quickly.
- How different family foods can be combined to provide adequate complementary foods, with special focus on animal foods.
- After 9 months the quantity of food increases to three meals of one-half bowl (250 ml size) each, plus 1-2 nutritious snacks, along with breastfeeding as often as possible.

#### 12 months of Age

*Why at risk:*

- The quantity and consistency of the food change at this age. The requirements of the child increase rapidly and ability to chew and eat is also much greater. Families are often not aware about the higher needs of a child at this age.
- Mothers often do not provide enough time to let the child consume adequate amounts of healthy foods; children prefer to eat themselves.
- Children develop a taste for highly salted and sugary foods and drink; this disturbs their appetites and discourages consumption of healthy foods.
- Need for special feeding during and after illnesses is often not met.

*Mothers/family members should also be counseled on:*

- How to teach and encourage children to feed themselves.
- How much food is needed to fulfill the child's needs and how to use family foods to prepare adequate types of meals for children of this age.
- Preventing child from eating too much of starchy staples like rice or potatoes or banana. Nutritious foods like animal foods, solid part of cooked pulses/dal/lentil, dairy products like cheese or yogurt, dark green or leafy vegetables, and colored fruits and vegetables should be fed. Oil or fat should be used in cooking the child's foods.
- Recommended daily schedule of complementary food for child at this age is three full bowls (250 ml size) family food, plus 1–2 nutritious snacks, along with continued breastfeeding.
- Importance of washing mother's hands with soap and water before preparing food and feeding the child; importance of children washing their hands before taking food themselves.
- Importance of adequate feeding during and after illness.

## Section 4

# ADDITIONAL INFORMATION

### 4.1 Malnutrition

Malnutrition refers to deficiencies, or excesses, or imbalances in intake of energy, protein, and/or other macro and micro nutrients.

***Causes:***

***Malnutrition may be caused by deficiencies of specific nutrients including:***

- Protein
- Energy (carbohydrate and fat)
- Iron
- Vitamin A
- Iodine

Deficiency in these nutrients causes different conditions or illnesses.

Both under- and over-nutrition (overweight and obesity) are included in the category of ‘malnutrition.’

**Under-nutrition** is the result of insufficient food intake to meet dietary energy requirements, poor absorption, and/or poor biological use of nutrients consumed. Undernutrition usually results in loss of body weight.

**Over-nutrition** refers to a chronic condition where intake of food is in excess of dietary energy requirements, resulting in overweight and/or obesity.

***Management:***

Consult the national guidelines for management of moderate acute malnutrition and severe acute malnutrition at the community and facility level (National Guidelines for Community based Management of Acute Malnutrition in Bangladesh, IPHN, DGHS, MOH&FW, 2011).

***Prevention of malnutrition:***

For prevention of child malnutrition mothers should be counseled on the following IYCF practices:

- Initiate breastfeeding within one hour of birth with colostrum feeding and no pre-lacteal feeds.
- Avoid bottle-feeding.
- Breastfeed exclusively for up to 6 months, giving not even a drop of water.
- Breastfeed every time the baby wants.
- Let the baby finish one breast and come off by him/herself before switching to the other breast.
- Mothers need to eat and drink to satisfy their hunger and thirst.
- Introduce family foods after completion of 6 months (181 days), four or more



different categories of foods to be fed every day (including one animal food at least once in a day).

- Practice responsive feeding, encourage the child to eat.
- Maintain handwashing practices before food preparation and before feeding the child. Children who feed themselves should also wash their hands before eating.

(Source: Adapted from the National Guidelines for Community based Management of Acute Malnutrition in Bangladesh, IPHN, DGHS, MOH&FW, 2011).

## 4.2 Maternal nutrition and breastfeeding

Anemia is a key health status indicator for maternal nutrition. It is estimated that one-fifth of perinatal mortality and one-tenth of maternal mortality are attributable to iron deficiency anemia. Anemia also results in an increased risk of premature delivery and low birthweight. Iron supplementation of woman during pregnancy protects mother and infant from anemia. Forty two percent of women in the 15–49 years of age group are anemic. The prevalence of anemia is associated with pregnancy and lactation; among pregnant women it is 50 percent and among lactating women it is 48 percent. This could be due to the high demand for iron and folic acid during pregnancy. (All data from BDHS 2011).

Adequate micronutrient intake by women has important benefits for both women and their children. Breastfeeding children benefit from micronutrient supplementation that mothers receive, especially vitamin A. Iodine deficiency is related to a number of adverse pregnancy outcomes including abortion, stillbirth, fetal brain damage and congenital malformation. In Bangladesh micronutrient deficiency among pregnant and lactating mothers is a common public health problem.

During pregnancy, a woman should consume one tablet of iron/folic acid (60mg iron & 0.4 mg folic acid) daily for a minimum of 100 days. When using salt, she should make sure it is iodized.

During lactation, a mother's nutritional intake should be increased to cover energy cost of breastfeeding. In practice, a lactating mother uses about 500 kilocalories (roughly equivalent to one extra meal) each day to make 750 ml breastmilk for an infant. Some nutrients come from her body stores; others need to come from an increased intake. It is helpful to advise a lactating woman to eat a greater amount and variety of food, such as meat, fish, egg, oils, seeds, cereals, beans, locally available vegetables and fruits, cheese, and milk.

### Nutrition during lactation

- During lactation a mother is breastfeeding a child and her own nutrition also needs to be maintained, so her nutritional needs increase greatly.
- Lactating mothers require more food than pregnant women. Lactating women should consume five meals each day.

- At each meal, a lactating woman should consume an extra handful of her usual food so that her needs can be met.
- A lactating woman also needs to drink sufficient nutritious liquids. The mother should drink liquids to satisfy her thirst. (However, during the first six months, baby should not be given anything other than breastmilk; not even a drop of water).
- For three months after delivery the lactating mother should consume one tablet of iron/folic acid daily to replace blood loss during delivery and to prevent anemia.
- Within the first 42 days after delivery, a lactating mother should consume one capsule of vitamin A (200,000 IU per capsule), to protect the mother herself and her child from vitamin A deficiency.

### Note:

Increasing mothers' food intake during lactation or consuming special foods are sometimes recommended to increase milk supply and to address the problem of perceived "insufficient milk." This is NOT CORRECT, as breastmilk supply depends upon frequent emptying of breasts and frequent breastfeeding and not on how much or what a mother eats. However, it is good to focus on maternal nutrition for pregnant and lactating women in order to improve their own as well as their babies' health.

## 4.3 Counseling on IYCF

Infant and young child feeding counseling is a process by which a health service provider can support mothers and babies to implement good feeding practices and help them overcome difficulties. Counseling need depends on child's age and mother's circumstances.

### Communication and support skills

#### Listening and learning:

- Use helpful non-verbal communication; this will encourage women to talk with counselor.
- Ask open questions about present IYCF practices and listen to mother attentively.
- Use responses and gestures which show interest and attention.
- Reflect back what mother says.
- Empathize, show that you understand how she feels.
- Avoid words which sound judgmental.

#### Building confidence and giving support:

- Accept what a mother thinks and feels about breastfeeding and complementary feeding.



- Recognize and praise what a mother and infant are doing right.
- Give practical help to improve breastfeeding techniques and preparation for complementary feeding.
- Give only relevant information.
- Use simple language.
- Discuss one or two options (e.g., small “do-able” actions); do not show commanding attitude.

## 4.4 Monitoring of IYCF

### Clinicians should monitor:

- Clinicians should closely observe the mothers’ and babies position and attachment during breastfeeding.
- Infant’s ability to attach to the breast lead to suck and swallow breastmilk properly.
- Infant’s weight gain and any abnormality in the mother or infant.

For IYCF programs, monitoring focuses on the proportion of pregnant women and mothers with children below 24 months received appropriate IYCF counseling and current status of feeding practices recommended by WHO.

### The most core indicators are:

- Timely initiation of breastfeeding within one hour of delivery.
- Exclusive breastfeeding in children up to 6 months (0–180 days).
- introduction of complementary feeding after 6 months.
- Dietary diversity.
- Quantities of complementary foods (as measured through frequency or number of meals).

## 4.5 Growth of children

### 4.5.1. Growth of a well-nourished child

The following table provides median weights and lengths (or heights) for well-nourished children up to two years by age.

**Table 4: Median weights and lengths of children up to two years by age (WHO growth standards for well-nourished children)**

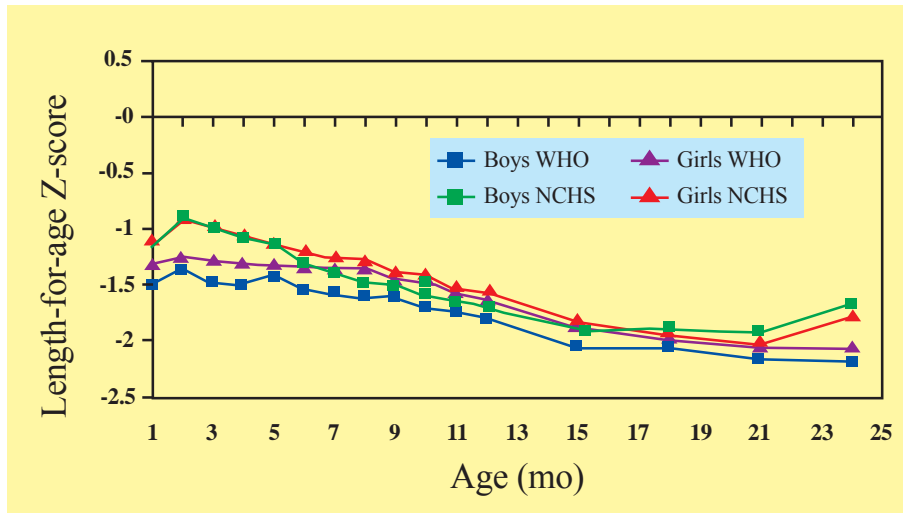
| Age       | Length-for-age, birth to two years<br>(median) |       | Weight-for age, birth to two years<br>(median) |       |
|-----------|--|-------|--|-------|
| In months | In centimeters                                 |       | In kilograms                                   |       |
|           | BOYS   | GIRLS | BOYS   | GIRLS |
| 0         | 50   | 49    | 3.3  | 3.2   |
| 1         | 55   | 54    | 4.5  | 4.2   |
| 2         | 58   | 57    | 5.6  | 5.1   |
| 3         | 61   | 60    | 6.4  | 5.8   |
| 4         | 64   | 62    | 7.0  | 6.4   |
| 5         | 66   | 64    | 7.5  | 6.9   |
| 6         | 68   | 66    | 7.9  | 7.3   |
| 7         | 69   | 67    | 8.3  | 7.6   |
| 8         | 71   | 69    | 8.6  | 7.9   |
| 9         | 72   | 70    | 8.9  | 8.2   |
| 10        | 73   | 71    | 9.2  | 8.5   |
| 11        | 74   | 73    | 9.4  | 8.7   |
| 12        | 76   | 74    | 9.6  | 8.9   |
| 13        | 77   | 75    | 9.9  | 9.2   |
| 14        | 78   | 76    | 10.1   | 9.4   |
| 15        | 79   | 77    | 10.3   | 9.6   |
| 16        | 80   | 79    | 10.5   | 9.8   |
| 17        | 81   | 80    | 10.7   | 10.0  |
| 18        | 82   | 81    | 10.9   | 10.2  |
| 19        | 83   | 82    | 11.1   | 10.4  |
| 20        | 84   | 83    | 11.3   | 10.6  |
| 21        | 85   | 84    | 11.5   | 10.9  |
| 22        | 86   | 85    | 11.8   | 11.1  |
| 23        | 87   | 85    | 12.0   | 11.3  |
| 24        | 88   | 86    | 12.2   | 11.5  |

Sources: [www.who.net/childgrowth/standards/height\\_for\\_age/](http://www.who.net/childgrowth/standards/height_for_age/) and [www.who.net/childgrowth/standards/weight\\_for\\_age/](http://www.who.net/childgrowth/standards/weight_for_age/) (accessed June 2013)

#### 4.5.2 Children's growth pattern in Bangladesh

In Bangladesh, up to 40 percent of children are born with low birthweights. In the first few months of life, growth accelerates with exclusive breastfeeding, but starts declining after non-human milk and other liquids are introduced at three or four months of age. The graph below shows that the decline in growth worsen over time because poor complementary feeding practices do not provide sufficient energy and nutrients.

**Figure 14: Growth pattern among children in the first two years in Bangladesh**

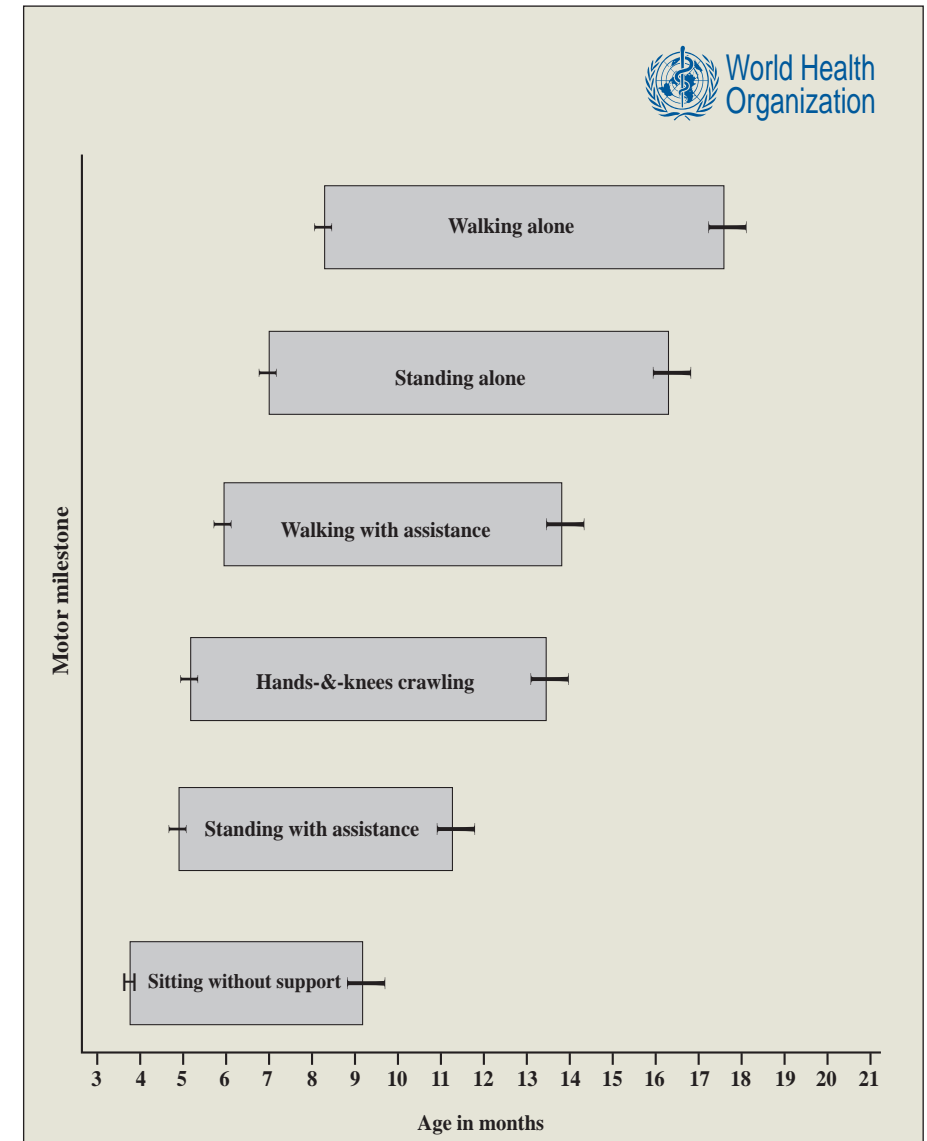


Source: Saha, Kuntal K. et al. 2009

#### 4.5.3 Milestones of children's growth

Rapid child growth and development takes place during the period from birth to 24 months, as illustrated in figure 15.

**Figure 15: Windows of achievement for six gross motor milestones**



Reference: WHO Multicentre Growth Reference Study Group. WHO Motor Development Study: Windows of achievement for six gross motor development milestones. Acta Paediatrica Supplement 2006;450:86-95.

## Annex. I

রেজিস্টার্ড নং ডি এ-১



অতিরিক্ত সংখ্যা  
কর্তৃপক্ষ কর্তৃক প্রকাশিত

রবিবার, মে ২৫, ২০১৪

Government of the People's Republic of Bangladesh  
Ministry of Law, Justice and Parliamentary Affairs  
Legislative and Parliamentary Affairs Division

### NOTIFICATION

Dated the 14th May, 2014/31st Boishakh, 1421

**S.R.O. No 79-Law/2014.**—In exercise of the powers conferred by section 23 of the Breast-milk Substitutes, Infant Foods, Commercially Manufactured Complementary Foods and the Accessories Thereto (Regulation of Marketing) Act, 2013 (Act No. XXXV of 2013), the Government is pleased to publish the following Authentic English Text of the Act, and it shall take effect from the date on which the Bangla Text of the Act comes into force under sub-section (2) of section 1 thereof:

**The Breast-milk Substitutes, Infant Foods, Commercially Manufactured Complementary Foods and the Accessories Thereto ( Regulation of Marketing) Act, 2013**  
(Act No. 35 of 2013)

An

**Act to re-enact, with amendments, the Breast-milk Substitutes (Regulation of Marketing) Ordinance, 1984 (Ordinance No. XXXIII of 1984) and repeal thereof.**

Whereas it is necessary and expedient to re-enact, with amendments, the Breast-milk Substitutes (Regulation of Marketing) Ordinance, 1984 (Ordinance No. XXXIII of 1984) and repeal thereof;

(Only relevant sections of the BMS Act are outline here)

**4. Restrictions on the matters relating to breast-milk substitutes, infant foods, etc.**—(1) For the purpose of import, local production, marketing, sale or distribution, no person shall print, exhibit, circulate or publish any advertisement of any breast-milk substitutes, infant foods, commercially manufactured complementary foods and any accessories thereof or engage himself in any such work.

(2) Within the scope of sub-section (1), among others the following things particularly shall not be done, namely-

(a) to distribute to any people, particularly any person or student or their family member who is engaged in or related to health care, nutrition, or education, any leaflet, handbill or similar instrument wherein there is an advertisement of any breast-milk substitutes, infant foods, commercially manufactured complementary foods or any accessories thereof;

(b) for the purposes of promotion or allurement of sale of any breast-milk substitutes, infant foods, commercially manufactured complementary foods or any accessories thereof-

(i) to offer or propose to offer any person any gift, discount coupon, price reduction or any other material free of cost;

(ii) to offer or give any financial or other benefits to any person or any officer or staff of any health care centre or any health worker for receiving any higher education or engaging in any research, in addition to, attending or participating in any seminar, conference, symposium, workshop, training, scientific meeting, education tour or international conference organized or sponsored by the manufacturer thereof;

(iii) to give financial provocation / alluring or any other gift to any health worker or any of their family members;

(iv) to use any health care centre or any medicine selling centre;

(c) to organize any competition or function for or to render any other assistance to, children;

(d) to give an impression or to conduct such activity to create a belief that breast-milk substitutes, infant foods and complementary infant foods manufactured commercially is better than or equivalent to breast-milk;

(e) to make direct contact with or to offer an alluring proposal to any pregnant woman, lactating mother or mother of children;

(f) during the publicity of any commodity, particularly child commodity (such as: diaper, clothes, toy, doll, cosmetics, toiletries, etc), to distribute any leaflet or gift relating to any breast-milk substitutes, infant foods, commercially manufactured complementary foods or any accessories thereof;

(g) to donate or distribute, among the organizations or rescue shelters that are engaged in saving or reducing risk of children below five years of age or pregnant woman or newly delivered woman who are affected or endangered by natural calamity as defined in clause (11) of section 2 of the Disaster Management Act, 2012 (Act no. 34 of 2012), any breast-milk substitutes, infant foods, commercially manufactured complementary foods or any accessories thereof;

(h) to do any other prescribed act.

**5. Provisions relating to import, local production, sale, etc. of breast-milk substitutes, infant foods, etc.-** No person shall, without registration under this Act, import, produce locally, market, sell or distribute any breast-milk substitutes, infant foods, commercially manufactured complementary foods or any accessories thereof.

**6. Information relating to breast-milk substitutes, infant foods, etc on the receptacle and label.-** (1) Without prejudice to the provisions of any other law for the time being in force, no person shall market, sell and distribute any breast-milk substitutes, infant foods, complementary infant foods manufactured commercially, or any accessories thereof, unless the following information and statements, under a heading 'Important Information', are printed or depicted on every receptacle or label attached thereto with distinct, easily visible, readable, sensible, understandable bangla letters with bright colours, namely-

(a) a statement captioned as "There is no substitute or equivalent to breast-milk", just below the name of the commodity, with such size of letters that are equal to the name of the commodity;

(b) batch number, registration number and date of manufacture and expiry;

(c) as the case may be, a warning message captioned as- "Breast-milk substitutes, infant foods are not the real source of nutrition" or "commercially manufactured complementary foods is not real source of nutrition";

(d) ingredients used and analysis thereof;

(e) instructions for preservation;

(f) any other prescribed descriptions.

(2) A receptacle or a label attached to the receptacle as mentioned in sub-section (1)-

(a) shall not contain any pictures of a baby a mother or both or any other similar pictures thereof;

(b) shall not contain any graphics or cartoon pictures for easy identification of a breast-milk substitutes, infant foods, and commercially manufactured complementary foods;

(c) shall not print any words suitable for or usable by a child or any other similar word;

(d) shall not print or contain any other prescribed descriptions.

(3) The receptacle shall have an instruction guide containing the rules of use for the breast-milk substitutes, infant foods, commercially manufactured complementary foods which shall mention prescribed descriptions.

**7. Educational or other information.-** For the purpose of providing before-birth or after-birth health services, every material, educative or informative, written or audio-visual, which is intended to be communicated to pregnant women, lactating mothers or mothers of child shall, among others, include the following information:-

(a) the benefits and excellence/superiority of breast-milk;

(b) the appropriate way of breastfeeding and continuation thereof;

(c) give importance to the benefits of feeding sal dudh (initial breast-milk) within 1 (one) hour of birth, exclusive breastfeeding for six months, feeding homemade food in addition to breast-milk after 6 (six) months, and the importance of breastfeeding up to two years of age;

(d) information on why used for feeding breast-milk substitutes, infant foods, commercially manufactured complementary foods can the accessories (such as bottle, pacifiers, etc) are harmful for health of a new born baby;

(e) information on how complementary food may be easily prepared at home with local ingredients (such as: local fruits, vegetables, fish, meat, milk, egg etc) and to encourage feeding of the aforesaid foods to the children;

(f) information on the harmful effect of feeding breast-milk substitutes, infant foods, commercially manufactured complementary foods on harm to the health of mother and child, impediments to develop good citizens of the country, social and financial loss and this bad effect;

(g) the difficulties for return to breastfeeding again after using breast-milk substitutes and infant foods;

(h) any other prescribed information.

## Annex-II

### References

Alive and Thrive. *Job aid, Infant and Young Child Nurtrition*, 2012

LLL. *Guide to Clinical Guidelines for the Establishment of Exclusive Breastfeeding*. Schaumburg, IL: La Leche League International; 2014.

IPHN/DGHS/MOH & FW. *National Guidelines for Community-based Management of Acute Malnutrition in Bangladesh*. Institute of Public Health Nutrition, Directorate General of Health Services, Ministry of Health and Family Welfare, Bangladesh Govt. 2011.

IPHN/DGHS/MOH & FW. *National Strategy for Infant and Young Child Feeding in Bangladesh*. Institute of Public Health Nutrition, Directorate General of Health Services, Ministry of Health and Family Welfare, Bangladesh Govt.; 2007.

IPHN/DGHS/MOH & FW. *National Training Manual on Infant and Young Child Feeding*. National Nutrition Services (NNS), Institute of Public Health Nutrition, Directorate General of Health Services, Ministry of Health and Family Welfare, Bangladesh Govt.; 2011.

LINKAGES. *Exclusive breastfeeding: The only water source young infants need. FAQ Sheet 5 Frequently Asked Questions*. Washington DC: Academy for Educational Development; 2002.

National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. *Bangladesh Demographic and Health Survey 2011*. Dhaka, Bangladesh and Calverton, Maryland, USA: NIPORT, Mitra and Associates, and ICF International; 2013.

PAHO/WHO. *Guiding principles for complementary feeding of the breastfed child*. Washington DC, Pan American Health Organization/World Health Organization; 2002.

Saha, Kuntal K.; Frongillo, Edward A.; Alam, Dewan S.; Arifeen, Shams E.; Persson, Lars Å.; Rasmussen, Kathleen M. Use of the new World Health Organization child growth standards to describe longitudinal growth of breastfed rural Bangladeshi infants and young children. *Food & Nutrition Bulletin*. 2009 June; 30(2):137–144(8).

UNICEF. *Training of masters facilitators/trainers: Community infant and young child feeding (IYCF), counseling package*. Jakarta: UNICEF; September 2011.

WHO. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: Recommendations for a public health approach*. Geneva: World Health Organization; June 2013.

WHO. *Infant and young child feeding: Model chapter for textbooks for medical students and allied health professionals*. Geneva: World Health Organization; 2009.

WHO/UNICEF. *Global strategy for infant and young child feeding*. Geneva: World Health Organization; 2003.

WHO/UNICEF. *Infant young child feeding counselling: An integrated course*. Geneva: World Health Organization; 2006.

WHO/UNICEF/UNFPA/UNAIDS. *Guidelines on principles and recommendations for infant feeding in the context of HIV and a summary of evidence*. Geneva: World Health Organization; 2010.